

The Swedish

Movement Cure

BY

Mme. PIPER RIEKMANN.

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THE SWEDISH MOVEMENT CURE

A TREATISE EXPLAINING THE VALUE OF SWEDISH MOVEMENTS
IN CASES OF MUSCULAR AND NERVOUS DISEASES.

BY

MADAME PIPER / RIEKMANN

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TO THE MEMORY OF MY FATHER,
MEDICINALRATH DR. PIPER,
AS AN EXPRESSION OF A DAUGHTER'S LOVE AND DEVOTION,
AND TO
HERMANN WEBER, ESQ., M.D.
AS A SMALL TOKEN OF MY ESTEEM AND APPRECIATION.

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PREFACE.

OFTEN in life do we overlook or undervalue whatever is simple, natural, and familiar, and think that our welfare is only to be found in that which is beyond our reach. This is especially the case with regard to the conditions under which health may be enjoyed. Providence has planted in our constitution the germs of countless powers and capacities. Their natural development and their proper use are the main conditions of the whole scheme of our life, the progress of which, as far as circumstances will permit, depends upon their fulfilment. Neglect of these conditions cannot but entail the forfeiture of health, happiness, and energy, and of the higher intellectual development.

One of the most important features of the triumph of our medical science is to harmonise with the outer world the forces inherent within us by properly-regulated practice ; by eliminating those heterogeneous medical remedies which are of doubtful utility and by adopting what is positive, simple, and natural. Medical science has rejected the rubbish accumulated in past centuries, which has resulted from imperfect knowledge and from crude empirical methods. The various powers of inherent movement, which require the will for their performance, may, by proper development and practice, not only protect our lives from countless ills, but may also materially contribute towards the cure or alleviation of many deviations from health which have already been incurred.

In order to bring the salutary effects of those remedies within the reach of all, we need only possess a clear knowledge of *how* and *where* to use them.

In a little book which appeared two years ago, I endeavoured to point out the method ; but I still find in my practice so little knowledge of these simple remedies that I am now attempting to explain, in an intelligible way, those which lay no claim to hidden and mysterious powers, and which are not based upon an artificially-created system. This method of cure closely follows nature's own path and seeks to restore the invalid by the same means which develop the healthy body and cure the diseased. It consists in the adoption of the simple and natural forms of movement, as founded upon the mechanism of the human body and indicated by the structure of the joints.

The importance of a complete system of movements, quite devoid of danger, which can be carried out under all circumstances, is generally acknowledged, though perhaps it may only be appreciated at its full value by the coming generation. These movements, properly carried out, constitute the most natural means of harmonising a life of culture with the physical laws of the human frame ; of maintaining, improving, and perfecting the entire bodily development ; of protecting the system from many forms of defect and weakness, and of providing an indispensable foundation for moral or intellectual development.

This system of movements is applicable to all the muscles of the body, and is comprised in a scheme which has received the name of "gymnastics."

What such movements are able to accomplish, and the different ways in which they are carried out, is clearly laid down in the following work. It also aims at estimating these muscular exercises at their real value, as compared with massage, which at present probably occupies a too prominent position. The proper exercise of muscles forms the essence of every method of treatment which has movement for its foundation. When employed in a methodical manner, according to scientific principles, the movements possess as high a value as any other remedy, and they

have an equally large sphere of action upon internal and external disorders and cases of deformity. It is, therefore, difficult to understand why some physicians accord them an inferior position and consider them merely as a part of massage. There is no historical foundation for such a view. This might be ignored if gymnastics and massage were treated as two separate branches of the healing art; but if both together form one branch, as seems to me to be more correct, then massage can be considered only as a part of gymnastics, in which it took origin.

It forms no part of my intention to discuss different gymnastic methods; I shall confine myself to the explanation of the Swedish method of Professor Ling, in order to disperse the errors and prejudices from which the method suffers. It has, no doubt, during the last few years, been more discussed than any other system, and has made most rapid progress. The continuance of this progress prevents any fear that the method will speedily be forgotten like a mere passing fashion. Massage has, perhaps, reached its climax of popularity, but the case is different with regard to gymnastic treatment. Both methods require careful sifting, and I do not think I am wrong in predicting that after gradual, thorough winnowing, they will yield more grain than chaff. The success of this Swedish method is recognised by all medical authorities, and, though the public is still, to a certain extent, indifferent to it, the brilliant results of so simple and natural a method of treatment cannot fail soon to attract a large and increasing number of adherents.

That this little book may contribute to this end, and that it may be kindly received and criticised, is the wish of

MARGARET PIPER RIEKMANN.

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INTRODUCTION.

CONCERNING the origin and history of gymnastics and massage I have already spoken in a former publication, and it gives me much pleasure to state that, since its appearance, the Swedish method has been regarded with special favour. The public prejudice against this new form of treatment has, to a large extent, disappeared. Natural remedies have outlived in a remarkable manner the former feeling against them. This tendency should be encouraged and directed into proper channels. Developed from hygiene—a science which, from a very subordinate position, has, in a comparatively short time, raised itself to one of the greatest importance, and has clearly explained to us the value of light, air, water, exercise, and attention to the skin in reference to the preservation of health—this has given a stimulus to the recognition of these powers for the restoration of health when it has been impaired by disease.

We earnestly hope that, as this movement continues to increase, the practice of these new methods will be left to those who possess scientific knowledge, and who are, therefore, capable persons.

THE SWEDISH MOVEMENT CURE.

CHAPTER I.

THERAPEUTIC AND HYGIENIC GYMNASTICS.

“ If mind is to succeed at length,
The body must supply the strength.”

MAN is a being possessing a mental and a bodily nature in intimate union.

In both directions—that is, in making full use of his mental and of his bodily forces—is he destined to exhibit his powers. The tendency of his whole nature must be based upon both these qualities. Mental indolence cannot enjoy either mental or bodily pleasure to the full. Life's seasonings are only rewards kept for the active. Defective or absent energy produces atony of the organs, disturbance of function, illness and, perhaps, premature death. Bodily powers increase by proper employment and can be kept at a certain pitch ; but the want of exercise lessens them, and they ultimately fall prematurely into abeyance. Though these facts are recognised by all, yet they have often been misapplied. Many expend their faculties in one direction only—it may be in mental activity—and quite omit the demands of their bodily requirements ; an error which, no doubt, depends in great measure upon mental development and refinement of the conditions of life.

Others only desire benefit without in any way using the powers by which it may be obtained.

Nature, however, will not be dominated, but retaliates very severely upon those who oppose her. Our various organs constitute themselves severe judges of errors against nature's behests.

The neglect of bodily development or, if the body has been well developed, the neglect of any of the powers at disposal (by means of which alone the interchanges of metabolism are mainly carried on) have brought, and are still bringing, many diseases upon mankind.

Recognising this fact, physicians have at all times prescribed and recommended proper exercise of the body as absolutely necessary for the preservation and restoration of health.

Various movements have been recommended for those whose occupation is sedentary or inactive. Thus, walking, riding, fencing, hill-climbing, gardening, and other bodily exercises in which strength is required, are advised.

When opportunity permits, these exercises are very much to be commended. Nevertheless, most people find them either too restricted or too severe, and often they are not kept up. Therefore they cannot be regarded as satisfactory substitutes for compulsory inactivity. These people have generally been restricted to regulated walking exercise as the only permanent way out of the difficulty. But it has always been felt that this form of activity is much too one-sided and insufficient, when by this means only the necessary amount of exercise is obtained, especially during the prime of life. Moreover, even this questionable help, "walking," has become less and less practicable, as, with the growth of culture, the mental work and general education have considerably increased. Time and attention and sometimes even the whole energy, are thus absorbed, and most people have neither the inclination nor the time to practise walking, merely as an exercise, for even a few hours. The disproportion between the requirements of mental work and education and occupation on the one hand, and of the duties necessary for the body on the

other, has, in a vast number of instances, become painfully evident.

It can be shown that a suitable method has been found to equalise this disproportion. The higher the mental life of the present and future generations the more it requires, as a condition of its progress, a higher degree of bodily development. For, if vitality of the mental growth is to be destined to bear blossom and fruit, this fruition can only be attained by attending to the condition of its roots. Just as the highly-cultured individual, as compared with his primitive ancestor, no longer depends for his food supply upon nature, so it is evident that his other physical requirements cannot be left solely to the course of events. He must try to ascertain his requirements, and in every way to conform to nature's method, and thus to convert the artificial into the natural. The higher life rises above primitive conditions of nature the more the human mind develops. The human mind submits the principal conditions of its existence to the guidance of scientific knowledge. Thus the absolutely physical wants will be brought into harmony with the dominant natural laws and with the highest requirements of life. In this way alone will man be able to respond to the requirements of the laws of nature which confront him during the process of development, to protect himself against the breaking of these laws and the unhealthy conditions which follow as a consequence.

In this way our present system of gymnastics came into existence. It may be described as being based upon muscular exercise, which has for its object the development of the body and of health. The system is the natural result of a higher physical training, depending entirely upon the course of development.

For such training, a one-sided use of the muscles or occasional natural gymnastics are too imperfect in themselves, too ineffective, to suit most of the conditions of life.

Gymnastics is the term applied to all forms of systematic exercises of the body.

The following pages are specially devoted to the consideration of gymnastics from a medical point of view, and especially of the Swedish method.

Like athletics, wrestling, &c., medical gymnastics form a sub-division of general gymnastics. They constitute a welcome remedy either for the prevention or the cure of various diseases, deformities, and of defective or stunted growth.

A.—MEDICAL GYMNASTICS.

The object of medical gymnastics is, by suitable movements of the body, which are adapted to each individual case, to cure or to improve certain morbid conditions, often chronic in nature. These movements are necessarily of different kinds. They are executed :—

- (1) By the patient's own muscular power.
- (2) By the efforts of a second person.
- (3) By some auxiliary mechanical contrivance.

The patient either resists these latter movements by his own inhibitory muscular action, or remains quite inactive.

Passive movements form, as it were, the preliminary stage to other mechanical influences, such as vibration, friction, strokings, kneadings, tappings, &c., in short, to all those manipulations which are usually included under the term "massage." Indeed, gymnastics and massage have, as regards their effect, much in common, and it is therefore of great advantage to employ both simultaneously, so as to obtain mutual benefits from them.

But medical gymnastics have a larger scope than massage. The diseases which demand muscular invigoration are far more numerous than those which demand an acceleration of the blood supply. The relation between massage and gymnastics, however, should be maintained, and is to be commended, and they should, in suitable cases, be combined.

At one time medical gymnastics were mainly employed in those chronic asthenic conditions in which no fever is present, and which are attributable to the want of exercise. It was soon found, however, that their province was wider, and extended to many other morbid conditions which were in no direct connection. We must, however, not go

too far and expect too much, as some adherents do, whose enthusiasm raises medical gymnastics to the dignity of a universal remedy, a panacea; and allows no place for other remedies.

¶ No such thing exists as a therapeutic panacea, or a universal method. The extremely complex nature of the human organism and its vital processes, and the consequent infinite diversity of its morbid states, forbids such a remedy.

If, however, medical gymnastics be kept within due limits, and are freed from bias; if they be brought into close relation with general medicine, thus employed, all without prejudice are bound to acknowledge them as an indispensable agent, and as an important addition for aiding the effect of healing agents.

To form a correct judgment of the nature of medical gymnastics in their entirety, and to estimate bodily movements at their true value as a legitimate remedy, we must be acquainted with the physiology of the motor organs—the muscular system in its relation to the management of the organism. The economy of the body includes the full activity of all its parts. If perfect development is to be obtained, and a normal state of health preserved, such bodily and mental exercise must be practised as is compatible with individual powers.

Of these two forms, bodily activity is by far the more important. This will be shown from the following considerations:—

Organic life depends upon uninterrupted healthy metabolism, *i.e.*, exchanges of food-stuffs and waste-materials. The waste has to be got rid of, as unsuitable for life processes, and assimilation of food-stuffs is necessary for their maintenance. By these exchanges the flame of life is kept alight from the first till the last beat of the heart.

The more freely tissue renewal is brought about the more life itself gains in freshness, power, and duration. The body must, therefore, in order to grow, continually renew its constituents. All disturbances of this process, if not soon counteracted or ended, produce disease, or, it may

be, death. Therefore, insufficient utilisation of food and defective elimination of waste materials, and their consequent retention within the body—that is, the subversion of equilibrium between tissue-use and tissue-waste—is one of the most common causes of irregularities in development, and of the permanent decrease of organic power. Such disturbance of equilibrium can be brought about equally by insufficient food or by too liberal diet, and is often the cause of premature ageing.

The stimulus to tissue-renewal and restoration of the organs to a state of healthy vigour depends on their activity ; that is so as long as this activity alternates with a proper proportion of repose. But the muscular system, as compared with the bony framework, or other bodily systems, is by far the largest ; and muscular substance belongs to those organic tissues which, by their functional activity—(the movements being brought about by the contraction of muscular fibres)—have the power of helping tissue change in the highest degree.

For these reasons, it will be seen that the muscular system is pre-eminently adapted by this activity to promote tissue change in the readiest, most complete and most powerful manner. This causes a beneficial increase of the vital processes. In fact, it brings about a renewal and rejuvenating of the blood and other fluids of the whole body and, consequently, an acceleration of the whole energy of life.

The blood is the common source of nourishment of all parts of the body, and muscular action increases its current, and thus affects the circulation.

Blood-making, blood-mixing; the entire process of digestion, the mechanism of respiration, the process of elimination, and indeed the whole organic mechanism of the body have their activity increased.

Thus we have immediate increase in frequency and strength of the beats of the heart, acceleration of breathing, increase in temperature, and, if muscular movements be continued, a greater desire for solid and liquid food will follow, the eliminating functions will increase, as seen by

the increased perspiration, and a more frequent desire to micturate, followed by a deep refreshing sleep.

The permanent benefits are:—Greater robustness, and consequently greater power of sustaining fatigue of all kinds, of enduring heat, cold, hunger, thirst, sleeplessness, and other disturbing influences, and also a greater power of resisting disease.

It has been proved, by physiological calculations and experiments, that a person persevering with muscular exercises will transform his body-weight in about four or five weeks completely, whereas with a bodily inactive individual, *ceteris paribus*, it will take from ten to twelve weeks to accomplish this.

The muscular substance itself increases as the result of vigorous movement, becomes firmer and more tense, and useless layers of fat and relaxed tissues disappear.

Since, therefore, muscular activity proves itself to be one of the best agencies for eliminating waste-products from the body, and for replacing them by new material, suitable for the economy of life, it is also of special service in preventing the accumulation and storage of useless and injurious particles, which so readily facilitate the work of pathogenic micro-organisms. Exercise thus assuredly removes a predisposing cause of disease more readily than any other means. When disease has set in, exercise often checks its further progress. For protection against disease or to effect a cure, other auxiliary forces may have to be called into requisition, *e.g.*, the regulation of the mode of life, &c. The assistance of the physician may at times be required, but well-regulated muscular exercise, suitable to the individual, forms one of the most essential and natural means for the prevention or cure of certain diseases.

Amongst the ailments belonging to this group may be mentioned, especially, various chronic abdominal complaints, so common in advanced life, with the whole army of their various sequels, such as weakness of digestion, torpidity and congestion of abdominal viscera, especially of the liver, kidneys and spleen, the portal circulatory system, the stomach, which in turn gives rise to trouble-

some headache, &c. The nervous system is always more or less involved, as is shown by debility, hypochondriasis, melancholia, &c.

Mention may be made of other diseases mostly depending upon faulty blood-formation, especially in the young, as poverty of blood, anæmia, and a predisposition to the scrofulous diathesis.

Another great physiological fact, by virtue of which muscular exercise is able to accomplish important therapeutical effects, is the close relationship between the muscular and nervous systems—the motor and sensory nerves.

Upon the normal state of the nervous system in all its parts, the well-being of both body and mind is immediately dependent, and it is of the greatest consequence to maintain both sets of nerves in equilibrium, so far as energy or capacity for work is concerned.

One side only can be raised at the expense of the other, and the balance can only be regained by restoring equilibrium. Upon this principle depends the effect of suitable muscular action in reducing or alleviating excitement of the nervous system, and thus proving a boon to suffering humanity, by removing all nervous strain and stimulating the mental faculties.

Muscular gymnastics thus become, in the hands of the physician, a "sovereign remedy," or at least an indispensable means of assisting the cure of lameness, muscular paralysis, weakness or excitability of the nervous system, hypochondriasis, hysteria, weakening emissions, mental and certain chronic diseases.

As an additional, but not unimportant, gain on the mental side, it may be mentioned that, by the regular exercise of the will for the execution of powerful bodily movements, by the constant victory over lassitude and laziness demanded by physiological necessity, the normal superiority of the mind over the body is cultivated, the will displays more energy, resolution and courage for the struggle of life. We conquer, by this perseverance, our most dangerous foe—our moral enemy—who is but too often proof against the best-chosen methods of bodily cure.

And at last we come to another very useful factor of muscle-activity for the healing art, for which no substitute can be found. That is, the influence thus exercised on the bones. It increases the firmness and elasticity of the ligaments and of the joints, rendering them stronger and more extensile, and improves the figure generally and the proportion of its various parts.

The construction of the skeleton and the attachment of the muscles on the frame, more especially on the trunk itself, are such that the carriage, the form and proportion of the curves of the body, influence the degree of extension and the development of the muscular parts. This is most obvious at the upper segment of the trunk, viz., the chest. A great many morbid conditions are due to pressure upon the vital organs contained in the chest and abdominal cavities, and important for our life and health. This is readily explained by the fact that, with a large class of people, the muscles about the chest, the strongest muscles for the movements of the arms, which consequently help to establish their bodily proportions, are those seldom brought into full activity.

Now, if we want to procure for these organs the possibility of regaining their normal freedom and function, or, this being no longer possible, to give relief, or to ameliorate the condition, the chest capacity is of primary importance. For this purpose there is, indeed, only one proper remedy, *i.e.*, the systematic application of judiciously-selected gymnastics.

In such a case it is our aim to widen or equalise the circumference of the body, especially the chest, and to bring the bony skeleton into better and more permanent proportions of capacity by muscle-action, and by the resulting mechanical extension or compression, by means applied sometimes on one particular part and sometimes upon the whole body.

I have found frequently, after only a few months' application of gymnastics, by taking measurements, even on the adult body, an increase in the circumference of the chest of from one and a half to two centimetres. It is easy to

estimate from these figures the gain accomplished in the cubic capacity of the chest space.

B.—HYGIENIC GYMNASTICS.

In the previous part of this work, gymnastics were treated of in relation to their character as a remedial agent. The necessity of a general use of hygienic measures, *i.e.*, health-preserving, prophylactic gymnastics, aiming not at the cure of morbid conditions, but rather at their prevention, becomes more apparent after an examination of the daily life of those who may be denominated as "movement poor," a class which includes nearly all the higher grades of society.

We know that many people have no opportunity of taking regular exercise in the ordinary way. The amount of muscle power constantly created within our bodies as latent energy must be enormous. But these "movement-poor" people do not use it. As a natural consequence, the renewal of this power itself, and, what is more to the purpose, of those vital functions depending upon it, gradually decreases, and finally disappears altogether. The effluent becomes blocked, and its water becomes muddy, if the outflow, or the portion used up, is less than the supply.

If we contrast the "movement-poor" life with an average proportion of bodily movement, we can see at a glance that the aggregate value and intensity of their ordinary movements are not only far below the normal, but are also performed in a very awkward, one-sided and quite inefficient manner.

When walking is the only exercise practised, four muscle groups are neglected, which are particularly necessary for the whole vital process, so far as their development is concerned.

1. The shoulder muscles.
2. The muscles of the chest (both due to the inactivity of the arms).
3. The abdominal muscles.
4. The muscles of the back.

The last two groups are neglected because of the insufficient movement of the trunk in walking.

Groups 1 and 2, i.e., the muscles about the shoulders and chest, have for their function not only the movement of the arms, but also the rhythmical expansion and contraction of the chest wall. They thus form part of the mechanism of respiration; but the pulmonary circulation depends to a great extent upon the condition of the respiratory process. Consequently, so does the aeration of the blood, the exchange between the carbon dioxide of the blood and the oxygen of the air, a process which is essential for the maintenance of life.

Man cannot exist many minutes without air, though he can live without food and drink for many days. Vital energy is, therefore, in direct proportion to respiration.

But through want of movement breathing becomes weaker and more imperfect, especially if the arm muscles are *not* employed. The elastic framework of the chest wall is not fully developed and expanded. The chest, even after having been fully developed, may gradually retract. In due course this may induce a predisposition to dangerous diseases of the lungs, *e.g.*, pulmonary phthisis (consumption), &c., or the heart may become affected.

Many other disturbances of nutrition may also be brought about, all resulting from the inadequate supply of oxygen, such as diseases of the circulation, gout, gravel or urinary calculus, &c.

It is therefore evident that we must not only take care to ensure pureness of the air, but must also permit a sufficient quantity to enter the lungs. This is possible only by maintaining the muscles of respiration at their highest capacity for work. A person with strong lungs is better able to ward off the bad effects of foul air than one with feeble respiratory organs. The former takes in a greater volume of air, which, though poor in quality, still affords him the minimum quantity of oxygen necessary to support life for a greater length of time. This fact is of great importance, since we cannot always breathe absolutely pure air with the full amount of oxygen.

Group No. 3.—The abdominal muscles help to form the soft walls of the cavity between the ribs and hips. The muscles in this region are partly fleshy and partly tendonous, and serve by their contractions to assist the functions of the organs of the abdomen (digestion, circulation of fluids, excretion and parturition). They also support the organs in position and protect them against the more powerful body movements, such as the lifting of heavy weights.

The abdominal muscles are also used in forcible expiration, speaking, singing, crying, vomiting, coughing, and in the various movements of the trunk.

It follows from this that in many ways the result of defective development may be harmful. Laxity of the abdominal muscles may lead to impairment and loss of all abdominal functions, rupture, and, in the female, tedious labours, exaggerated afterpains, &c., during the puerperium.

Digestion and respiration are the two most important processes of animal life; the former prepares the blood from the food, and the latter effects its purification to such an extent that it is capable of performing organic reconstruction—the tissue changes, in fact, the fundamental conditions of life and health. Both processes must be kept in perfect harmony and proportion, according to the requirements of the human organism as a whole. In this lies the task of the physician. It is to be regretted that the importance of respiration, and, therefore, the training and cultivating of the respiratory muscles, are still not too well understood among the public.

Group No. 4.—The function of the muscles of the back is to straighten the spine, to keep it erect and rigid, as well as to serve for its lateral movements, and to assist inspiration and expiration. Their healthy activity is, therefore, of great importance for the whole process of life. The erect position of the trunk for a prolonged period is specially important, a property depending upon the function of these muscles. This is equally true for the easy performance of the functions of the chest and abdominal organs, which suffer so much by a curved and contracted

position of the trunk. In the young especially it is important for the preservation of a correct form of the back and of the whole body.

The insufficient activity and development of the muscles of the back is no slight factor in producing many cases of spinal curvature. In other respects the power and activity of the muscles have a general influence, viz. :—

(a) The spinal column forms, in the mid-line of the body, the axis of support for all its movements, which owe their intensity to the contraction of the spinal muscles.

(b) The blood-current to and from the spinal cord is directly influenced by the powerful action of the muscles of the back, and thus the nutrition of the cord itself is affected. The ultimate result is the strengthening of normal and the inhibition of the abnormal, reflex-actions, as well as of morbid tension and excitement of the nervous system, and, therefore, a more real and perfect control of all external morbid influences is obtained. A healthy, active, and powerful spinal cord is, doubtless, one of the most essential means of protection against general debility and nervous irritability and the various enemies of life : hypochondriasis, hysteria, &c.

A careful glance at the usual conditions of health of "movement-poor" individuals confirms the truth of this, and shows, in most of their morbid phenomena, an easily-explainable pathological connection.

As often happens, even in early life, the want of movement exercises its depressing influence upon the body, so as to prevent its full, healthy, normal development. It remains faulty and defective, partly as regards its form, and partly as regards its vital functions. General poorness of blood, or a faulty admixture of fluids, afflicts early life with a chain of innumerable ailments. External influences easily crush the tender plant ; many diseases—especially in the chest—nip life in the bud. The want of exercise is associated, also, with certain conditions of adult life. The full activity of adolescence apparently overcomes the defect for a time, and does not allow the loss of its natural requirements to be felt to any notable extent. But this, as

a rule, lasts only until the middle period of life is reached. The apparent indestructibility of youthful power is a thing of the past. The vital process cannot go on for ever, like the fly-wheel of an engine. It will cease if, through illness or indolence, vitality has been neglected and life's functions have become exhausted. The period at which this takes place will depend upon how youth has been spent—whether the undue demands put upon it have been compensated by moderate and careful living. The most essential point is to maintain this equilibrium between vital income and vital expenditure, between tissue renewal and tissue waste.

As regards the physique of man during the second period of life, he lives on the interest of life's capital, accumulated during the first half. It is well for him who has not lived on his capital of vitality during youth, but who has rather increased it by adding thereto the interest. In the organism, "Interest" means the accumulation of power gradually and continually stored within us. "Capital" is the capacity for drawing upon this store of energy. The time for increasing "Capital" is passed. The enjoyment of the interest can only last with prudence by proper use of the stored-up materials of energy at our command. It is only thus that man preserves "Capital" of energy without lessening its amount, and retains the acme of life as long as possible. The gradual consumption of the capital is demanded by the advance of old age, in obedience to the irrevocable laws of nature.

The so-called diseases of middle-age, that host of chronic abdominal complaints—hæmorrhoids, congestion, the prodromal signs of gout, asthma, hypochondriasis, hysteria, melancholia, paralysis, attacks of apoplexy—should be unknown, and he is happy who understands how to observe nature's first hints and to remember that "prevention is easier than cure."

If we do not think of our body until pain or disease reminds us of its presence it is often too late. It is a possession entrusted to us, which should be the object of our anxious care. The best curative efforts have their limits, and then nothing remains but surrender.

This, briefly, is the picture which life shows in various and manifold ways. We shall not go too far in saying that want of exercise, although not the only one, is certainly one of the most frequent causes of all these dangers to mankind as we have endeavoured to portray them.¹

We recognise from this the absolute necessity of hygienic gymnastics for all those whose positions in life do not allow of other muscular action than walking. Even though, as now and again happens, some people apparently escape the consequences of the want of exercise, they will certainly supervene and show themselves in premature old age, early decay, curvatures and contractions of the body, stiffness of the limbs, general weakness, &c.

In the ordinary mode of life, an age of from 60 to 70 years does not show evidence of much wear. It is not uncommon to find a comparatively robust state of health in people of from 70 to 80, if they have practised muscular activity and otherwise led a natural life, even under less favourable conditions of climate.

“Live an active, moderate, and contented life;” these are the three words with which hygienic health philosophy appeals to us. A happy old age can be promised to all who care to follow the triple motto.

In intimate harmony with this is the commandment of the ethical philosophy of life: “Strive to conquer thyself, thy mental and bodily weaknesses and faults.”

Begin this contest bravely. At whatever stage of life

¹ Other important causes are :—(a) The under-rating of the process of respiration and insufficient care to obtain fresh air. (b) The regular use of hot spices, spirits, coffee, and tea, which though their influence is somewhat disguised by habit, are doubtless injurious to health, even when taken in moderation. But for those who are not accustomed to them they form excellent medicinal remedies, as, *e.g.*, when one is on long journeys, forced marches, sea voyages, or when exposed to great cold or heat. They are only of use when prescribed occasionally, but their habitual use is detrimental to health. (c) Sexual excesses. (d) Enfeeblement of body and mind, a disproportion between requirement and capacity, the want of co-ordinate physical and moral powers, faults which are produced during youth.

you may have arrived, it is never too late, and continue the struggle for freedom by ennobling yourself. In faithfully adhering to these commandments, hygienic and ethical, lies the whole secret of the most difficult of all arts, the art of life, *i.e.*, the art of living rightly.

CHAPTER II.

GENERAL SIGNIFICANCE OF GYMNASTICS AS A CURATIVE MEASURE.

AS I have already said, I regard massage and gymnastics as two distinct branches of the cure by movement ; and I must here point out that, in spite of their close relationship, their action is dissimilar. Gymnastics act, in the first place, indirectly and generally upon the whole organism, in order to strengthen it, and thus enable it to remove abnormal growths and morbid organic tissue metamorphoses.

Massage, on the other hand, acts immediately and locally by irritating and cleansing the tissues. Taking into consideration these different tasks of both branches, it follows that the field of operation of gymnastics extends over a far larger area than that of massage. This has always been recognised, although some massage enthusiasts have tried to establish advantages in its favour and give to it the preference even in cases in which movements alone come into play.

Let us now recall how mechanical interference and movements can be made useful.

Massage, acting towards the heart, centripetally accelerates the circulation of the blood as well as the current of the other fluids of the body, not only in the area directly acted upon, but in the surrounding neighbourhood, especially at the periphery ; as, for instance, when blood and lymph are driven forward by pressure of the fingers, the vessels thus emptied are immediately refilled with blood or lymph from the neighbouring vessels and lymph channels.

This, in its turn, accelerates the current of arterial blood, because the arteries, while they conduct the blood from the heart—centrifugally—are only slightly contracted on account of their depth and the resistance of their walls. From the increased tissue-drainage, it follows that the waste products of tissue-change are more freely removed, the process of assimilation—*i.e.*, tissue exchange—is strengthened, the temperature of the parts is increased, and, as a result, the nutrition of the tissue is improved. Should there be diseased or waste products accumulated in the tissues, massage aids in effecting their removal, driving them forward or causing them to be absorbed.

In those cases in which these waste products have formed masses, it may be necessary first to dislodge them, and then to break them up, which is accomplished by the more powerful manipulations of massage.

The anodyne action of massage in acute inflammation is explained by the diminution of the pressure which is exerted upon the nerves by the arrest of the circulation and the accumulation of inflammatory materials in the part affected.

All the effects of massage, as already mentioned, are very easily understood, especially as they may often be directly observed at the bedside. They have also been confirmed by scientific investigations.

The irritative effects produced by stroking, beating, and vibration, are less obvious; but even in this case the phenomena have been clearly explained. Beating, for instance, causes contraction, and perhaps also strengthening of the skeletal muscles; and, since it acts without the assistance of nervous action, it also causes contraction and improves the nutrition of paralysed muscles. In a similar way the smooth muscular fibres of the internal organs are influenced, as we are taught by the results of abdominal massage in cases in which the bowels are constipated by imperfect peristaltic action. Besides the muscle-fibres, the nerves, especially the trunks of the nerves, are also irritated by mechanical manipulations of the skin or other organs. The latter effects are shown either directly, according to

the implicated nerve, or in the area of its distribution, by irregular sensations, muscle-contractions, altered secretions, greater or less calibre of the vessels, &c., or as reflex actions, the effect of the manipulations not manifesting itself in the part which has been treated, but in quite another nerve-plexus, belonging even to a different system.

These phenomena are still partly unexplained. Neuralgic pain can be removed by vibration, and by pressing upon the nerve. Of course, with nervous disorders, we have not always to deal with nerve irritation, but the purifying action of massage may be of some account, especially where pathological changes of the nerve are observed, or when the latter suffers from the pressure of a tumour in its neighbourhood.

Massage also exerts its beneficial effects by acting upon the mucous membrane of the air-passages and digestive organs, since it serves to detach mucus and restores their functional activity. The reflex action produced on more extensive areas of the vascular system by mechanical influence is not quite understood. But it is known that vibrations applied between the shoulder-blades, or on the sternum, slows and strengthens the pulse, which has been increased in frequency by disease, and that abdominal massage raises the blood-pressure.

The effects of massage are, therefore, as we have seen, principally local, and it is only massage applied to the trunk or general body-massage which is capable in any degree of directly influencing the general health of the patient, by stimulating the circulation of the blood and other fluids, as well as by assisting the progress of metabolism.

As regards the effects of the so-called passive movements, *i.e.*, those applied to the patient by external manipulations, while the patient remains perfectly inactive, they are of great importance, because they antagonise or help to remove the results and complications which follow injuries, inflammations, prolonged disuse of joints (as in muscle-wasting, shortening, and adhesions of articular ligaments, degeneration of cartilages, and other hindrances

to movement). They act in the same way as stroking. They accelerate the blood and lymph flow. It is on this account that these movements are also employed when the joints are healthy, in order to act directly on the whole system. They are often employed as a compensation for active exercise, which frequently cannot be borne by weak patients.

Active movements, on the other hand, are limited, either to a few muscle groups, or to a single muscle, or they may engage the greater part of the whole muscular system.

In the latter case, our aim is to act directly upon the whole organism; in the former, upon local diseased conditions.

In any case, the first effects of active movement are purely mechanical, resembling, to a certain degree, those of passive movements. The crucial point does not, however, lie here. It lies in the effect produced on the muscles themselves. It is an aphorism, universally recognised, that all organs degenerate from inactivity, and are preserved and improved by use. This is especially applicable to the muscles of the animal organism.

Exercise strengthens the muscles more than anything else. If a muscle is completely paralysed, *i.e.*, if the will has no power to cause contraction in it, the electric current and massage especially may be regarded as most important remedies. But as soon as the muscle is again capable of responding to any degree, voluntary movements must necessarily be considered most effective. These not only exert a most favourable influence upon muscle nutrition, but act in another way upon its capacity for doing work. They increase the power of its nerve supply, and of that portion of the central nervous system from which the nerve proceeds. Muscle and nerve work are inseparably connected; muscle exercise is nerve exercise. This fact undoubtedly explains why muscle exercise can only be partially replaced by other remedial agents. Although this is not always seen by everyone as clearly as one might wish, still, the effect of muscle exercise as a direct local remedy can never be denied. But the indirect effects

of those muscle exercises which extend over large muscular areas deserve more respect than is generally bestowed upon them. Let us try to elucidate them in as concise a manner as possible.

The muscular portion of a strongly-developed adult body amounts to about one-half of the whole body weight. This proportion may vary in different individuals. The muscle weight may exceed the half, but, on the other hand, it may sink as low as 40 per cent. of the body weight, as seen in lethargic individuals, whose muscles are weak ; but, even in the worst cases, muscular tissue greatly exceeds in weight all other tissues of the body.

This bulk of tissue is one of the most important in the organic economy. The fact mentioned above, that organs degenerate by inactivity, and thrive by exercise, shows that the chemical processes, which represent tissue-change, are much more energetic in the active organ than when it is at rest. And since tissue-change is brought about especially by the blood, there will be, necessarily, a greater volume of blood in active organs.

A muscle contains a better blood supply, even after it has ceased working, than is the case with one at rest. If many muscles are in action at the same time, the quantity of blood which, even in muscles at rest, is considerable, is markedly increased. We have, therefore, great quantities of blood flowing towards the active organs, of which, of course, other organs are, for the time being, deprived. Muscle exercise, therefore, acts as a blood syphon on certain parts, a fact of great practical importance, as, for example, in the case of the abdominal organs in people who lead a sedentary life, or in the case of the brain of such as use much mental strain, and have their brains thus overcharged with blood. The large increase of blood brought about by muscle exercise, is, however, not stored up in the muscles, but, on the contrary, its onward flow is accelerated by their contraction. The valves, situated at intervals in the veins, do not permit a backward flow, but direct the onward flow of the blood towards the heart. It is clear that if the circulation, and with this the tissue-change and

its formation are increased within the muscles, all the organs of the body will have to be considered. Thus the heart beats more quickly and powerfully, respiration is more active and deeper, the organs of digestion demand more food and digest it more quickly and more perfectly, and the glands secrete and excrete more actively.

Improvement is also produced in many ways on the nervous system and an increased capacity for work obtained. Healthy, refreshing sleep, a feeling of greater strength, good humour, and a cheerful desire for work are the results.

All this, of course, can only be briefly mentioned here, but it is evident that muscular exercise, if properly performed and continued for a long period of time, is an excellent and most effectual remedy for favourably influencing the whole body. From this, it follows that there must be an enormous number of morbid conditions, mostly chronic in their nature, which can be combatted more or less successfully by movement, and that it is not too much to say that the field of operation is a far more comprehensive one than that of massage. Both remedies are closely connected, inasmuch as they often act in a similar way and complement each other to a certain degree. But it must be emphatically stated that their point of vantage lies differently, and that their chief tasks are apart.

They must not be wrongly substituted for each other, but each should complete the effect of the other at the proper time. Both should be employed with equal experience and care. These requirements are necessary, not only for the use and benefit of the patient, but also with respect to the remedies themselves, which increase in value as they are properly employed.

A few words about the dangers of movement and massage:—

It is clear that our remedies, especially when intended for their effects upon the whole organism, can only be applied in chronic diseases, and in the convalescent state, and that patients suffering from fevers and acute diseases, and those requiring rest, are unsuitable for this form of treatment. Errors in diagnosis are also especially dangerous, *e.g.*, the mistaking of an ulcerated stomach, &c.

There are also cases where these remedies must be excluded, inasmuch as they assist in the diffusion of pus, particles of malignant growths, and other foreign bodies into the blood and lymph channels; this may lead to the infection of the other parts distant from the local focus. It may conduce to embolism, pyæmia, metastatic abscesses, &c., thereby jeopardising the life of the patient.

We see from this that movement and massage are not remedies which we can leave with impunity in the hands of people who are not familiar with the niceties of the subject, or who have not devoted themselves to mastering its principles or to acquiring aptitude in the manipulations and exercises which its proper understanding and administration demands.

CHAPTER III.

THE DIFFERENT METHODS OF GYMNASTICS.

IF gymnastics are to accomplish the various problems allotted to them, they must be able to adapt themselves to each individual requirement and condition of strength of the patient who undergoes the treatment. They must be able to grapple with conditions of single muscles or groups of muscles, as well as with the general muscular system, and to impose upon them a graduated labour in a manner best calculated to improve them.

If the various gymnastic methods are considered with this in view, the superiority of the Swedish system of gymnastics, as contrasted with the German method, must be favourably apparent to all.

In the German system, certain mechanical operations are omitted. The passive movements are wanting, and also the resistance movements of the Swedish gymnastics, by means of which it is possible to separate antagonistic groups of muscles, and to impart to them a definite amount of exertion, which can readily be increased or reduced by the operator.

The resistance which in German gymnastics is produced by means of the weight of the parts of the body, or by the weighting of the hands with dumb-bells or bars, or by a quiet, yet powerfully-executed, free movement on the part of the antagonist, is more or less undefined in its extent when compared with the resistance transmitted by practised operators.

German gymnastics are limited in their application, and an increase of movement is attained by multiplication of exercises or difficulty of the primary position.

How much more successful must be the gradually increasing resistance, which forms a special part of the Swedish movement system.

However, the value of German gymnastics is considerable, especially if one wishes to influence the general condition, but still it is not satisfactory enough. The free movements are specially valuable from the educational point of view.

Now, so far as both the manual and the mechanical methods of the Swedish movements are concerned, the principal point to bear in mind is the active muscular exercise in the movements of resistance. How should the pressure of resistance be regulated?

All the authorities, from Professor Ling down to the present representatives of his methods, have made it sufficiently clear that the resistance offered must be in direct proportion to the condition of the muscles, and is to be increased in ratio to the increasing strength. They explain further that the bones are levers, to which the muscles are attached. Taking this into consideration, they state that the resistance should not remain the same, but should vary in its power.

It is at once obvious that the various apparatus employed in Zander's method are not of a form to replace the efficacy of the human hand.

Appliances by which the patient can employ his own muscular strength may be used to assist the operator, but mechanical apparatus alone can never decrease or increase the resistance in harmony with the laws of levers, or in accordance with the rules by which muscular power acts.

The problem therefore is : how can healthy vital activity and harmonic development of the muscular system be produced? Physiology shows that the law of development is gradual growth. Any increase of the muscular strength is impossible without development. This implies that the exercise should be adapted from the beginning to the reserve force, and that it should only be graduated in proportion to the muscular strength. If the work is beyond the normal strength, then exertion is approached, which is

involuntarily followed by a loss of strength. Should, however, the work be too easy the strengthening process ceases and time is spent in vain. It is necessary, therefore, that the exertion corresponding to his different muscles should be prescribed for the patient, and that this precise quantity should be continued until the patient feels that the exercise is too light. Then it can be so increased that the same degree of work is attained as before.

Which of the two methods accomplishes these requirements in the most thorough manner? The answer is easy. It is difficult so to fix up a machine that it will act with a certain maximum or a certain minimum and will have all the degrees of strength lying between. By the manual treatment, however, the resistance can be adapted to the strength of the patient; it can be gentle at first and then gradually increased, if one finds, after a certain exercise, that the little fatigue first felt ceases completely. It follows that the muscular strength has increased, and further resistance must be added for the patient to overcome. It is possible, therefore, for the operator to judge of the patient's strength and regulate his movements.

The gradual development of the muscular strength cannot be attained in a more perfect or complete manner.

Since a similar amount of work produces on the patient a greater amount of fatigue on some days than on others, it is necessary that this circumstance should be considered, and modification in the degree of the movement readily effected and the number of movements reduced.

An exercise is never prescribed so strong that it can have any dangerous or evil results, even on the weakest patient.

By means of his trained perceptions, the gymnast possesses the capacity of readily determining the movement necessary at any moment for each patient, strong or weak, old or young, to fix the degree of labour most suitable to the patient, and to regulate the degree of resistance required. In children especially one has a good guide in forming a judgment as to the most suitable strength of movements, in observation of the looks and behaviour of the child.

Preference must, therefore, be given to this manual form of gymnastics, because it allows these modifications to come into play and enables the exercises to be administered in ratio to the strength of the patient.

Herein resides the importance of a real scientific employment of gymnastics. By this method alone can any control be maintained over the development of the various muscles. Only thus can the practice of gymnastics gather reliable material, in order to obtain an exact insight into the changes of energy of the nervous and muscular systems which are in combination with various conditions of disease.

The mechanical method of gymnastics, however, requires a too high degree of self-activity and thought, a difficult thing for many patients, and one apt to produce fatigue.

Another important advantage of the manual method is based upon the uniformity of the movements. A movement is uniform when at any moment the strength corresponds to the resistance. Muscles only act upon the bone levers. Since the power applied to the lever acts differently, according as the lever forms with the force a right angle, an acute angle, or an obtuse angle, it follows that the resistance must be adapted to it. If it were not so, the muscle, when it acts powerfully, would have to produce too much work, and too little when it acts feebly. This occurs with the mechanical apparatuses. In the manual form the resistance is applied, as nearly as possible, to the natural lever (arm, leg, etc.) ; for instance, in "flexing the arm" it increases until the upper arm and the forearm form a right angle, and it decreases, when the forearm begins to form an acute angle with the upper arm. Therefore, since the operator during the exercises perceives where the maximum and where the minimum of resistance has to be placed, a uniformity of movement is ensured.

I have detailed thus far these matters, not only because they are in themselves interesting and instructive, but also because they must bring conviction to the mind of every educated reader that gymnastics practised by quacks cannot satisfactorily fulfil the requirements.

I shall only mention briefly the greater many-sidedness of the manual method in practice, the multiformity of its movements and primary positions, as well as its adaptability in urgent cases, as some of the exercises can be carried out in the house of the patient.

Each method has its adherents, who defend it ; but, as we have seen that German gymnastics are too one-sided, that the mechanical methods require the addition of the manual, we are justified in looking for greater advantages from the manual method. It calls forth a more gradual and more uniform development of the muscles, and through the many-sidedness of the movements produces a greater and more intensely stimulating effect.

CHAPTER IV.

THE MANUAL SWEDISH GYMNASTICS, WITH THEIR PRIMARY POSITIONS, FREE MOVE- MENTS AND RESISTANCE MOVEMENTS, PASSIVE MOVEMENTS, AND MECHANICAL INFLUENCES.

INTRODUCTORY REMARKS.

IN the literature of Swedish gymnastics we find two great headings: that of primary position and that of the movements theory. In order to understand them more readily I shall treat them under four headings. In the first, I shall deal with the primary position; in the second, with the free movements and the resistance movements; in the third, with the passive movements; and in the fourth, with the mechanical influences.

The primary position is that position from which an exercise or movement is made and by which the exercise is more or less influenced. If, for instance, the exercise is to be a flexion of the hip-joint, it is of great importance whether it is performed in a pleasant sitting position, lying, standing, or suspended, or whether the arms are hanging down or stretched over the head.

The next point which I have to emphasise is that I make a distinction between general movements and mechanical influences. The former are produced through natural or artificial muscular strength, or through changes of position of the body, with reference to each other, according to the bony articulations. The mechanical influences, however, consist in manipulation from the outside—pressure by

which the tissues themselves are immediately influenced, and changes in position can be produced. The movements of Swedish gymnastics exactly correspond to natural daily movements. The question is, to bring the various bodily parts into a certain angular relation with each other, bending, stretching, adducting, abducting, circumducting or moving certain parts round their long axis (rotation).

All those movements can be carried out by the patient independently, through his own muscular strength, or may be applied artificially. In the former case the movements are called active, in the latter passive movements. In the Swedish gymnastics, the resistance movements are specially to be considered, movements which have to be carried out conjointly by the patient and by the operator. They, therefore, may be classified among the active movements.

Movements are called *passive* when the patient does not bring into play any kind of muscular work at all (not even resistance), but devotes himself to maintaining the primary position in an inactive condition.

Among the active movements we reckon all the free movements and the resistance movements. The former are those which the patient carries out by himself, without the help of a second person—an operator. The latter are such as are carried out by the patient with the help of one or more operators. This is either carried out in such a manner that a certain movement is done with the head, trunk, or limbs, and that the operator makes the movement more effective by a corresponding resistance, or in such a manner that the operator brings a part of the body of the patient into a certain posture and is opposed by a certain resistance on the part of the patient. The resistance movements of the former sort, in which the muscles are shortened (contracted), are called double-concentric or active-passive. Those of the latter kind, in which the muscles are forcibly elongated, are called double-excentric or passive-active.

An active movement can be carried out, therefore, in a threefold manner as a free, double-concentric, or double excentric.

The Swedish gymnastics of to-day employ the free movements less often than the resistance movements, and the double-concentric are those which are almost always employed, the double excentric only exceptionally.

A movement, to be beneficial for the muscles, must be consecutively repeated. Naturally this is only possible when the primary position is resumed after each movement. For instance, after each flexion of the arm it must be replaced in the extended position before the flexion can be repeated. Each movement, with the exception of circumduction, consists, therefore, of two separate parts, the flexion and extension, the abduction and adduction, and the returning to the primary position. Mostly for one exercise only a certain group of muscles is called into play, without the participation in the exercise of the opposing (antagonistic) group. Therefore, in a double-concentric movement the return is double-excentric, *i.e.*, the moving part of the body of the patient is carried back by the operator into the primary position against the resistance of the patient. More rarely, the forward movement is given double-excentric, and the backward movement double-concentric, so that the muscles of extension alone are exercised.

Double exercises of resistance are only exceptionally prescribed, for they require too much self-exertion on the part of the patient.

For each patient treated by this method, the respective physician lays down in writing suitable exercises, which are altered weekly or monthly, in accordance with the observed improvement.

1ST SECTION.—THE PRIMARY POSITION.

The primary position is that position which is taken up by the patient in the beginning of the exercise. In a movement we can stand, kneel, sit, lie down, or hang.

And thus we are enabled to map out five principal primary positions. In each a different position of a single

part of the body is possible, and therefore we derive from this a large number of primary positions.

Circumstances determine which position is to be selected in each case. In general it is best to endeavour to discover what the natural primary position is, a position which is least likely to interfere with the respiration or circulation.

The kind of disease, the condition of strength, and the aptitude of the patient, the convenience of the position, so far as the operator is concerned, the necessity of change, are all points to be considered in each case in selecting a suitable primary position.

It should be remembered that some of the primary positions are so difficult for the patient that they relax his strength more than the exercises do.

We distinguish the five principal positions :—

1. *Standing Position*.—The heels are placed together, the toes apart from the extent of an angle of 60° to a right angle, the knees are stiffened, the legs are close together, the trunk is braced up, the abdomen is contracted and the chest expanded, the shoulders drawn back, the head erect. The eyes are directed straight forwards, the arms hang downwards in a natural position. The whole position should not be forced in any way, but natural and easy. This, however, can only be attained after several exercises.

2. *The Kneeling Position*.—The patient takes up the same position as in No. 1. Kneels, however, by placing the leg down to the ankle on a padded bench. The inner part of the knee, leg, and feet are placed together.

3. *Sitting Position*.—The patient sits on a hassock, stool, or bench, so that the trunk forms a right angle with the thighs, these with the legs, and the legs in turn with the feet. The trunk as in No. 1, the arms hang naturally, the hands rest on the bench or on the hips.

4. *Lying Position*.—The whole body lies on the back, stretched out on a bench.

5. *Hanging Position*.—The patient is suspended without touching the floor, holding with the hands on to a bar, ladder, rings, or some such things. The hands are kept

the shoulders-width away from each other. This position is the most fatiguing, because the digital contractors act powerfully, and the breathing may be considerably impeded. It is of great importance for the orthopædic treatment of diseases of the spinal column, but is less used in other diseases. It is not suitable for elderly persons.

The standing position is very important and frequently used; it only causes too much fatigue when it is carried out consecutively for a long time. Breathing and arm-exercises are carried out in the freest manner in this position. And it is also suitable for numerous exercises of the head, trunk, and legs.

The kneeling position is in itself not specially fatiguing, but becomes so on account of the unaccustomed nature of the position. It is a good primary position for exercise of the trunk.

The sitting or the lying positions are the least fatiguing; they are, therefore, especially used by weaker patients.

The individual basal positions, which are derived from the primary positions, are very numerous. To mention them all would be too much. I mention only that in each basal position there may be changed (*a*) the position of the head, (*b*) of the trunk, (*c*) of the arms, (*d*) of the legs. On the prescription is written down the required primary position of the patient.

2ND SECTION.—THE ACTIVE MOVEMENTS AND THE RESISTANCE MOVEMENTS.

These are designed to afford exercise for the muscles and for the nervous system which governs them. At the same time they exercise an effect upon the capsules of the joints, the ligaments, the muscles, the tendons, the blood-vessels and the nerves, by temporarily stretching and moving them in their relative positions. Of course, this latter result is more completely attained by the passive movements, which are, however, not suitable for effecting alterations in the muscles or the nervous system.

All these exercises must be carried out deliberately and

in the same rhythm. For the latter, the respiratory action should be the guide; in the exercises of the arm and trunk especially a rhythmical respiration is of the utmost importance. Certain muscles which extend from the arms to the chest, the muscles of the back and of the abdomen, act on the respiration in such a manner that from that fact certain rules can be formulated. Where this is not the case, other circumstances must act as a guide.

Every active movement has a point of greater and of less fatigue. The first corresponds to the part of the movement in which the counterpoise, the resistance of the operator, is to be overcome. This is effected by the shortening of the muscles. The latter corresponds to the return of the effort to a position of rest, and is effected by the elongation of the muscles.

Since the respiration itself has a greater or less point of fatigue, the general rule is that the point of greatest fatigue accompanies the expiratory movement, and the least the inspiratory. Only certain arm and trunk movements deviate from this rule, those, namely, in which the chest, during muscular contraction, takes up the position of inspiration. In these cases inspiration occurs at the commencement of the movement, whilst in all the other active movements inspiration precedes the movement.

A.—The Movements of the Head.

Bending and Raising the Head.—The head can be turned forwards, backwards, or from side to side, and from these positions be restored to the original position. The restoration from the nodding position is most applied, a movement which engages the muscles of the throat and also the muscles of the back. The head should, at the same time, not be turned to one side or another, a mistake which frequently happens quite involuntarily. The resisting hand of the physician is to be placed on the forehead in bending forwards, on the occiput in bending backwards, and on the respective temples of the patient in bending sideways.



FIG. 1.—BENDING AND RAISING THE HEAD.



FIG. 2.—CIRCUMDUCTION OF THE HEAD.

Circumduction of the Head. — The patient causes the vertex to describe a circle by gradually bending the head and causing it to move to every side. Where resistance has to be applied, the hand is placed lightly on the vertex in a manner so as not to produce any retardation in the venous circulation. The movement takes place in alternate directions.



FIG. 3.—ROTATION OF THE HEAD. (*To the right.*)

Rotation of the Head.—This is practised as active and resistance movements in wryneck, rheumatic conditions, &c.



FIG. 4.—ROTATION OF THE HEAD. (*To the left.*)

B.—The Movements of the Trunk.

Trunk Flexion and Trunk Extension.—The trunk can be bent forwards, backwards, and from side to side, and from this angular position can return to the primary position; these exercises can be carried out as free movements or as resistance movements; we generally select the primary position in such a manner that it will not be too difficult

for the patient to maintain his equilibrium, and that he may be able to give his full attention to the movement itself.

There is a certain resistance necessary in the forward bending of the trunk when it is necessary to exercise the



FIG. 5.—TRUNK FLEXION AND EXTENSION.

muscles of flexion. In the free movement the muscular action starts the movement, but the weight of the trunk helps the body to bend further in front.

Raising the Trunk.—Since in this movement the weight of the body has to be raised, resistance need scarcely be prescribed. Often the patient requires assistance to rise. In any primary position it is a strong exercise and not suitable for elderly people.

Bending backwards of the Trunk, Raising and Side Movements.—They can be produced from various primary positions, since the arms can be put in various positions. These movements are especially important in curvatures of the spinal column. In most cases resistance is employed ; stronger with patients more accustomed to the exercise.



FIG. 6.—CIRCUMDUCTION OF TRUNK.

Circumduction of Trunk.—We speak of trunk circumduction when the pelvis is fixed, but the trunk executes a circumductive movement. This exercise is mostly prescribed as a free movement, seldom with resistance and only in a standing or sitting position. The circumduction is first produced in one and then in the other direction.

Circumduction of Pelvis.—The exercise is almost always carried out in a lying position. The legs must be closed and the pelvis is moved in such a manner that the feet describe a larger or smaller circle. In this movement support is given to the patients on the shoulders.

Trunk Rotation.—The trunk can be turned either to the right or to the left, or alternately to left and right. In the latter case it is called alternate rotation. This form of exercise is mostly used when we wish to alter the general condition of health. One-sided rotation is employed in spinal curvature, and in the after-effects of pleurisy.

C.—Movements of the Upper Extremities.

Finger Movements.—As a result of wounds, paralysis, writers' cramp, and so forth, we are not infrequently called upon to treat separate fingers and even separate joints with resistance movements.

The problem is, whether to flex the whole digit, or only part of it. Circumduction can be performed properly by the thumb only ; by the other fingers in a more or less incomplete way. Rotations are quite impossible.

In these exercises we place ourselves in a convenient position opposite the patient, who rests his arm on a cushion or apparatus. Intelligent patients can now and then produce the requisite resistance with the sound hand, after having received the necessary instructions from the operator. However, those exercises are difficult and often fatiguing, and it requires a good deal of patience and perseverance to obtain satisfactory results.



FIG. 7.—FINGER FLEXION WITH RESISTANCE.

*Wrist Movements, Rotation of the Hand inwards and outwards (Pronation and Supination).—*They are produced from the same position and consist of flexion, extension, circumduction and rotation. I have successfully treated sprains and weakness of the wrists after fracture.

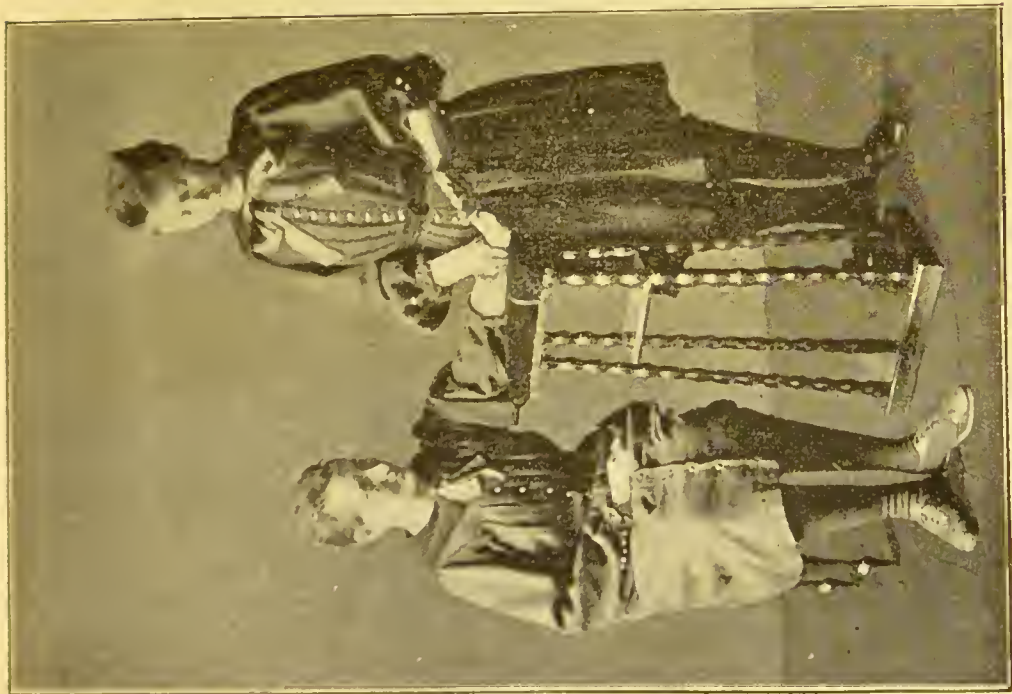


FIG. 8.—FLEXION OF HAND WITH RESISTANCE.

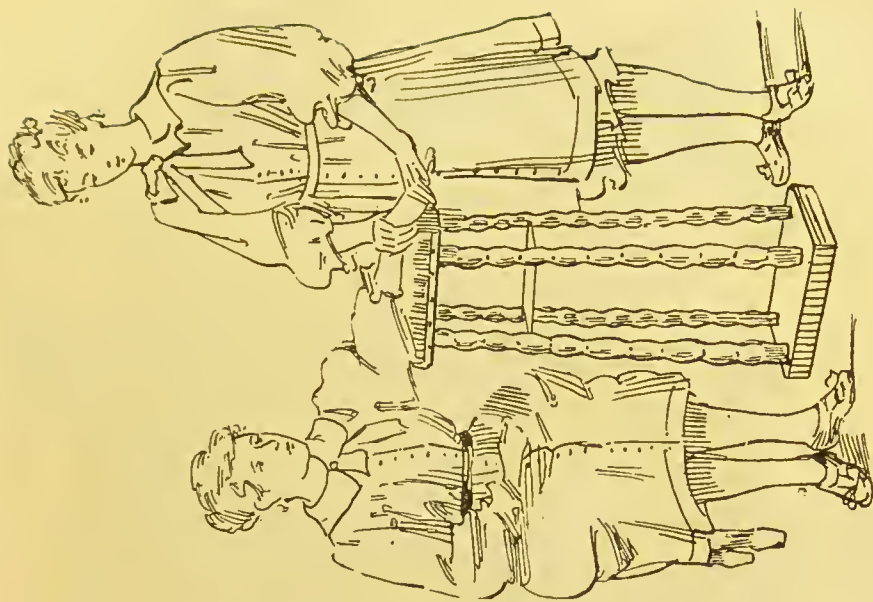


FIG. 9.—EXTENSION OF HAND WITH RESISTANCE.

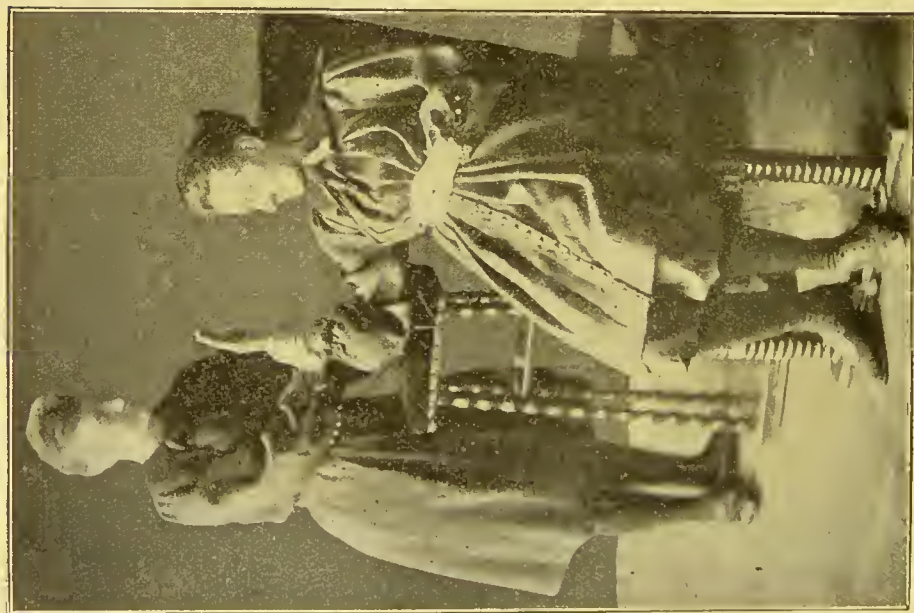


FIG. 10. — EXTENSION OF FOREARM WITH RESISTANCE.

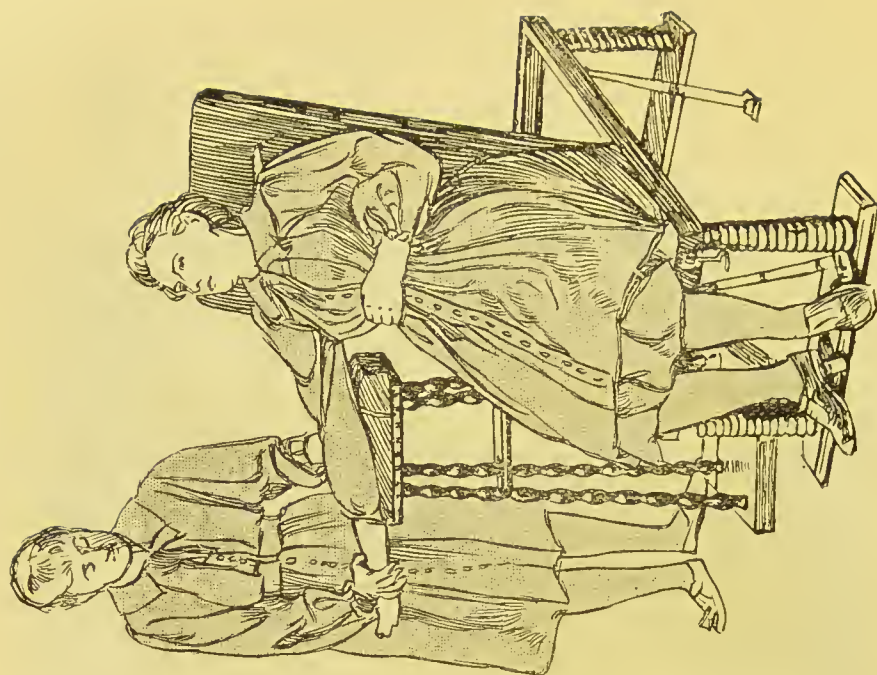


FIG. 11. — FLEXION OF FOREARM WITH RESISTANCE.

Flexion and Extension of the Arm.—These exercises can be carried out in the standing, sitting, and lying positions. The resistance, which under certain circumstances can only be applied unilaterally, is produced by the operator on the hands of the patient, or by a bar, which the patient catches hold of. For the regulation and acceleration of the circulation, this movement is largely employed.



FIG. 12.—ROTATION OF FOREARM WITH RESISTANCE.

Rotation of the arm is practised as active and resistance movement after fractures and dislocations.

Movements in the Shoulder-Joints.—This joint is loose and permits the movement, of the arm in every direction :

upwards, forwards, and backwards; these exercises are known as shoulder-raising and lowering, backwards and forwards pressure. The arms are best placed in a natural position. It is practised with good results in cases of rheumatism and gout.



FIG. 13.—SHOULDER
RAISING (ACTIVE).

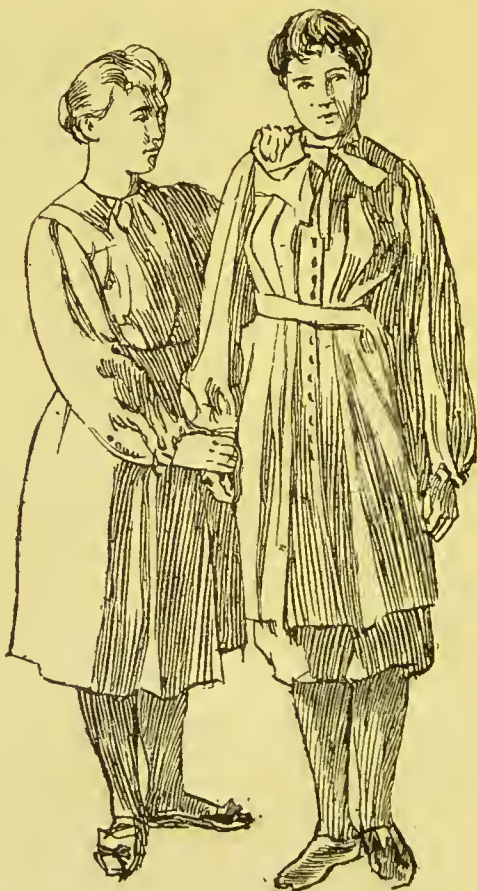


FIG. 14.—SHOULDER RAISING AND
LOWERING WITH RESISTANCE.

D.—Movements of the Lower Extremities.

Movements of the Ankle.—The ankle moves freely in all directions. The movement of the foot towards the outer side is less free than towards the inner side. In both movements a slight simultaneous rotation of the foot is produced. Flexion and extension are those most employed as resistance movements, and they are most conveniently produced in a lying position. Circumduction is not so frequently prescribed as a resistance movement, but generally as a passive movement.



FIG. 15.—FOOT FLEXION.



FIG. 16.—FOOT EXTENSION.



FIG. 17.—FOOT CIRCUMDUCTION.

The Movements at the Knee-joint.—Flexion and extension only come into question here. Flexion of the leg is in most cases only brought to a right angle, though there is even a freer movement possible. The best primary positions are the half-sitting and the lounging position.



FIG. 18.--EXTENSION OF KNEE.

Movements at the Hip-joint.—The movement of the hip is very free. The best exercises for this region are : Raising the leg from an angular lying position ; raising the leg, lying with the neck held stiff ; hanging by the hands on a bar, and lifting the leg straight forwards, then throwing the leg to one side or the other ; stretching out both legs simultaneously and returning to the primary position ; circum-

duction of the legs ; lying in an angular position, stretching out the legs ; the same in the hanging position ; rotation of the legs outwards from an angular lying position.



FIG. 19. —RAISING THE LEG WITH RESISTANCE.



FIG. 20. —LOWERING THE LEG WITH RESISTANCE.



FIG. 21.—FLEXION AND EXTENSION OF LEG.



FIG. 22.—BENT LEG CIRCUMDUCTION.

Simultaneous Movements in several Joints of the Lower Extremities.

In these movements, the knee and ankle, as well as the hip joint, are bent, and then respectively flexed or extended. In certain primary positions those exercises can only be produced with both legs simultaneously ; in other positions, on one side only. In a few positions the movement can be executed either on one side or on both sides. The most important exercises are the following: Head in a fixed position, hands on the bar, knees bent and remaining so ; a flexion and extension of the legs with hands on the bar and head supported. The extension muscles only are engaged in those exercises ; the flexion is effected by the weight of the trunk, when the extension muscles have to

prevent too sudden or too forcible action. In "angular lying position with the knees drawn up," first the one and then the other knee, or both together, can be exercised. This angular lying primary position is the most favourable for the operator, because he can conveniently grasp so as to afford resistance.

3RD SECTION.—THE PASSIVE MOVEMENTS.

Under this heading we shall treat of movements similar to those already described. Only in this case they are performed by the operator while the patient keeps his muscles relaxed. He is entirely passive. The primary positions also are often the same. Sitting and lying positions are to be preferred, wherever possible. The manner in which passive movements are executed and the time at which they take place, require to be adopted to individual cases of disease. General rules cannot be relied upon. We also discriminate here between :—

A.—Movements of the Head.

Extension, Flexion, Rotation, Circumduction.—These serve to exercise the muscles of the throat and neck, and are very important in orthopædics.

A faulty position of the head acts unfavourably upon the general carriage; we find it mostly in persons with curvature of the spine.

These exercises must be cautiously prescribed at first, for in anæmia they readily cause giddiness, but they are well borne after some practice, and can even be prescribed for vertigo. They are to be carried out in the first place in a sitting position and in a uniform manner. The arms and shoulders are to be kept still and motionless. The more difficult primary positions follow later on.

B.—Movements of the Trunk.

It is specially important to mention: Bending and stretching of the body, rotation and circumduction, raising and rotation of the pelvis, extension and expansion of the chest.

As the primary position, the patient may either be sitting, so as to act more fully upon the internal organs, or standing, so as to develop the muscles. In Spinal Disease it is often advisable, to carry out exercises of the trunk on one side only, in order that one arm may take up a different primary position to the other arm. There is also a movement called one-sided deep respiration. If one puts the right (or left) hand below the right (or left) axillary space firmly against the ribs, flexing the trunk to the right (or left) side, and placing the left (or right) forearm over the head, and then takes a deep inspiration, the left (or right) half of the chest is more expanded than the right (or left).

C.—Movements of the Upper Extremities.

(1) *Finger Exercise*.—Passive movements are often necessary for the hand and the fingers, and they are much used for remedial purposes. They can be employed more extensively and in a greater variety of ways than the active movements. Thus, for instance, an extensive circumduction is possible with all the fingers, and they can also be rotated by passive movements. Active rotation is impossible. The edges of the palm can be passively pressed together, so that the whole palm with the fingers forms a cavity. Actively this cannot be done. In many conditions these movements are of great use.

(2) *Movements of the Wrist*.—Flexion, extension, rotation, circumduction, adduction and abduction only are taken into consideration.

(3) *Movements of the Lower Extremities*.—And as the movements of the ankle, of the knee, and those which are performed simultaneously in several joints. The latter are most properly carried out in an angular lying position, in order to give to the operator freedom in the execution of the movements.

4TH SECTION.—MECHANICAL INFLUENCES.

It is generally the habit to term the mechanical influences "massage," and to derive from it four methods or move-

ments with a French terminology: effleurage (stroking upwards), petrissage (kneading), massage à friction (rubbing), tapotement (tapping).

The Swedish gymnastics, however, have far more movements, comprising beating, pressing, vibrating, slapping, sawing, etc.



FIG. 23.—STROKING.

The upwards stroking is generally the mildest of the mechanical movements, even when executed with a strong pressure. It has no effect on the deeper parts of the body, and is performed with the inner part of the hand and fingers. The stronger stroking helps the blood-circulation in and beneath the skin. It must be carried out in a

centripetal manner, in the direction of the blood vessels and of the lymphatics. A very mild stroking, however, acts upon the nervous system, and can be executed in any direction required. The part to be stroked should be placed horizontally, a sufficient hold should be taken, and one must be careful that the muscles are as much as possible in a natural position of rest.



FIG. 24.—FRICTION.

Friction is generally practiced over small surfaces of the body. It consists of smartly performed linear or rotatory rubbings, assisted by pressure of the thumb or by the points of the other fingers. It serves for the removal of morbid conditions of the sweat glands, muscular enlarge-

ments and swellings, etc. We must, however, be very careful in removing swellings which contain pus or other substances foreign or harmful to the blood circulation by friction. More powerful pressure can be gradually combined with friction, especially in swellings of the tendons or joints.



FIG. 25.—KNEADING.

Kneading consists of getting hold of a fold of the skin, or of the belly of a muscle, and in pressing and relaxing alternately. The kneading can also be carried out progressively. In both cases the position of the hand must be changed and the place of the operation shifted, so that the effect shall not be one-sided. There are large or small,

hard or soft spots, which are either superficial, where the layer of muscles is thin, or deeper, where the muscles are thicker, and are often painless, though they may be very painful.

The operator has to take heed of the various circumstances, either with regard to the form or to the degree of the strength of the kneading, so as not to make bruises which produce the contrary effect to that which is desired.



FIG. 26.—KNEADING.

Swellings, nodes, which show an unnatural hardness in one and the same place, are to be carefully loosened by a to and fro movement of their attached connections with the surrounding tissues.

Fulling can only be produced with both hands simultaneously in large areas, such as the arms, the legs, abdomen, when the condition of the abdominal walls permit of it. All the fingers are brought into play in producing this exercise. The hands are moved either along the limb or across the limb in opposite directions. This ensures an



FIG. 27.—FULLING.

alternate displacement of the soft parts; a more rapid circulation of the blood and muscle plasma is produced; this also affects the deeper lying parts. Fulling of the limbs is best carried out in such a manner that the working fingers proceed centripetally, and the operation is not to begin from below, but from above downwards.



FIG. 28.—SAWING.

Sawing is easily understood. It is used in the sense of increasing and diminishing pressure, carried out gradually for a certain time, by means of the fingers, either on limited regions of the body, *e.g.*, nerve trunks, or by means of the hands over larger regions of the body.



FIG. 29.—VIBRATIONS.

In *Vibrations* the operator, moves his hands in a quick, trembling fashion, and places the finger-tips or the palm of the hand on the patient's body, whereby the vibrating motion is imparted to the patient either with the finger points or with the flat surface. By this vibration the tissues, but particularly the capillaries and, lymph channels, are affected, and also the nerves.

Tappings. The name describes them. They produce strong vibration and stimulation of the tissues, more especially of the muscular and nerve elements. The tapping can be limited to definite points; for instance, where a nerve is emerging, or, as in most of the cases, they extend over larger or smaller regions of the body. In the former case they are produced by the tips of the semi-flexed middle-fingers, or with the first joint of the middle-finger.



FIG. 30.—BEATING.

A stronger form is *Beating*. This is performed with the inner edge of the hand, which is used for administering a series of regulated blows. The fingers are nearly straight-

ened, but not stiffened. The wrist-joints being thrown smartly forward, so that when the one hand falls, the other is rising, the 5th finger and the terminal joints of the ring and middle-fingers act with their outside edges on the part to be treated. When, however, Beating, as it is practised and taught, is carried out with stretched closed fingers and with the edge of the palm, the beating is hard and unresilient.

Percussion is further practised with the closed fist, and mostly on the side of the little finger, because in closing the fist the muscles of the little fingers and the other soft parts fall as it were to the outside and form a soft yielding pad over the bony structures. Percussion is of milder application than it looks. The fist can also be so closed that the terminal finger-joints do not act as the others, but remain extended. By this an air-space is formed between the fingers and the palm. We then do not slap with the edge of the hand, but with the palm, that is with the palmar surface of the second or third joint from the 2nd to the 5th finger. I have mostly used this Slapping for the os sacrum. In order to produce the strongest and most penetrating effect, we also can, if necessary, employ the upper surface of the closed fist.

Slapping is produced with the open palm. This requires no explanation. It is well known as a means of education. A powerful irritation of the skin is produced, as well as a vibration of the internal parts, as, for example, in slapping of the chest.

So much for the different manipulations. But we must once more emphasise the fact that a well-defined separation of the single manipulations is not always possible. Definite rules for the practice of massage cannot be laid down. In order to obtain the same result, different methods are possible. Any physician who has much to do with massage bases his method and manipulations on his own experience and skill. They often differ from the original rules. Detailed descriptions and pictures can give an idea to the novice as to what is required to be learned ; but the art itself can only be acquired by practice.

The question of the duration of the massage, or whether it is to be practised on the naked skin or over a covering and other questions of a similar nature, cannot be answered in a general way. I myself do not carry out massage longer than forty-five minutes, and on the naked skin with the use of pure vaseline, without the assistance of brushes, artificial rubbers, &c.

Lately the "muscle-percussion apparatus" by Klemm, and his "elastic hammer" have been employed in massage, and there are also "massage machines" worked by an electro-motor. Still it is found that a skilfully and intelligently-applied massage with the naked hand alone, is more successful in most cases.

CHAPTER V.

THE USE OF MASSAGE ON THE
DIFFERENT PARTS OF THE BODY.

THE head, throat, and abdomen are among the parts for which massage has a special importance in cases of disease, and applied to which it has been followed with special success.

The *Massage of the Head* generally begins with a mild percussion over the skull, in order to produce a richer supply of blood and muscle plasma, and to act also by the vibration upon the vessels of the meninges, or on the brain tissue itself. Insomnia and headaches are often favourably influenced by "head-percussions." The vibrations of the head act more energetically when they are decreased, in a natural manner, by the simultaneous active movement. Soft strokings from the sides of the head down to the throat and arms are much used. Very often the hair is only slightly touched, according to the condition and the momentary occurrence of pains.

Neuralgic pains can be relieved by pressure or punctuation on the painful part, or on the nerve-trunk. They can often be completely removed. We act upon the nerve-trunk at a point where it lies upon a firm back-ground (bone).

It may be further mentioned that ophthalmologists frequently employ stroking and rubbing of the eyeball.

The Throat.—Muscular rheumatism is frequently present in the muscles of throat and neck. It is influenced by massage, especially by kneading. Strokings are also

frequently used, and especially in cases in which we have to accelerate and to continue the flow of blood from the head.

The vessels of the neck and throat are near the surface and can easily be reached ; strokings on the side part of the throat and lower down the neck divert the blood. In catarrhs of the pharynx and larynx, and also in paralysis, we can, in addition to the strokings of the throat, also use vibrations of the pharynx or larynx.

The Trunk.—Vibrations are very often carried out on the trunk to act specially upon the internal organs. The nervous and vascular systems are stimulated, the muscular elements, which to a large degree form the walls of the inner organs, are irritated and made to contract. A vibration of the os pubis, for instance, can cause such a contraction of the distended large intestine or bladder that often the patient can scarcely retain their contents by means of his sphincter (that is, prevent their suddenly emptying.) Indeed the action is more pronounced in one person than in another.

The following vibrations are in most use :

Vibration of the Trunk in a relaxed sitting position.—This acts equally both on the chest organs and on the abdominal organs.

Vibration of the Stomach, lying in a bent position.—To be used in dilatation, atony, nervous and catarrhal conditions of the stomach.

Vibration of the Intestines in an angular lying position—often acts favourably in cases of catarrhs of the intestine and colics. It may be practised on one part of the intestine only, or upon the whole abdominal region.

Vibration of the Intestines in an angular knee flexed position.—This is useful in diseases of the large intestine. Besides that, percussions, beatings, and slappings are used, which in their action can hardly be distinguished from vibrations.

Percussion of the Back, standing position, the arms supported.—This affects the juxta-spinal region, that is down the vertebral column to the right and left side of the

spinal cord. The treatment has a generally stimulating effect.

Beating of the Chest and of the back in a stretched standing position.—Acts soothingly upon the lungs, to which the vibration is transferred, in chronic catarrhs and emphysema (dilatation of air vesicles.)

Stroking of the Back in a fixed, upright position.—Is pleasant and soothing to most neurotic persons.

Energetic Kneading and Percussions on the back.—These are very often employed, especially in pains of a nervous mostly neurasthenic kind, and in muscular rheumatism localised chiefly in the region of the flank and in the muscles of the neck and shoulders.

The mechanical treatment of the muscles of the back and trunk is not without value in spinal curvature. This is due to the stimulation of the nutrition of the respective muscles.

Pressure in Spinal Curvature.—The pressure action as such is strongest when the patient is entirely passive. In skoliosis it is often necessary to produce a most powerful pressure, which enables one to remove the curvature, temporarily at least, and even to throw it to the opposite side.

The manipulations have to be adapted to individual conditions as to the variety and position of the curvature. Pressure is especially adapted for cases where there is no rigidity.

The manipulation of the massage of the abdominal region is especially important, and has to be carefully applied. It is especially successful in cases of chronic constipation, and also in cases of intestinal disease of a catarrhal or nervous character. In diseases of the stomach, especially in dilatation, milder percussions and strokings are seldom employed.

The principal value is attributed to the kneadings, which as far as possible apply to the whole intestine, but especially to the colon.

Those kneadings are varied by strong and slowly carried out strokings, which act by driving onward the contents of the colon. The patient takes up angular position with

the knees drawn up so that the abdominal muscles shall be fully relaxed.

This part of massage is in no case to be given over to assistants. An exact knowledge of anatomy, physiology, and medicine in general is absolutely necessary in order exactly to individualise those who are phlegmatic or anæmic, nervous or debilitated, fat or emaciated, and not to treat all in the same way.

I have treated the massage of the heart in a special little book, because in recent years it has had such splendid results in association with baths and movements that the first authorities in the world, like Professor D. Ortel, Dr. Hermann, Dr. Nebel, and others allege that such results have never been obtained by recourse to pharmaceutical remedies.

The Upper and Lower Extremities.—These are often subjects of mechanical influences; the indications are mostly rheumatic or gouty conditions, neuralgia, paralysis, muscular debility (either central or peripheral in origin) accidents, inflammation and their sequelæ, &c. All the manipulations are employed.

The Strokings are carried out respectively by beginning at the wrist or at the ankle and proceeding centripetally along the extremities, bit by bit, partly with the whole hand, partly with the fingers only, according to the position and the size of the parts to be treated, and following accurately the paths of the veins and the lymphatic vessels.

The Kneading begins first at the tips of the fingers and continues upwards to the muscles of the fore-arm, then to those of the upper arm (the deltoid muscle is included). The latter muscle requires special treatment on account of its size and situation.

For the same reason the "gluteal muscles" have to be kneaded with a greater intensity, after the leg and the thigh muscles have been treated in the same order as those of the arms.

The kneadings are followed by displacements or rolling of the muscles along the limb from side to side. Rotations and pulling of the muscles are also to be performed.

Swellings in muscles, in tendons, and in lymphatics are to be subjected to friction. In the upper extremities one begins in the joints of the fingers, palm, and wrist; the movements are continued into the joints of the hand, elbow, and shoulder, and are terminated with friction at the point where the clavicle unites with the shoulder-blade.

The frictions are combined with more or less pressure, according to requirement. The ankle and knee joints are rubbed and pressed in the same order, as well as the tendons of the feet and leg, with the exception of the *tendo achillis* which is preferably kneaded and percussed.

General Massage of the Body. — General massage is employed as a hygienic measure and as a remedy in cases of illness. It plays a great rôle in the treatment of debility, anæmia, and hysteria. Strokings, frictions, pullings, kneadings, and percussions are used, passive movements being often added. The duration or order or force of the individual manipulation cannot be governed by definite rules. Usually, strokings should form the commencement of the work, the other mechanisms following, strokings being again employed at the end. As regards the order of the parts of the body which require to be treated in this way, we begin usually with the lower and upper extremities first and the trunk last.

In the treatment of the extremities we begin at the distal end, at the feet or hands, and gradually apply the massage upwards, naturally keeping the fingers working towards the centre.

It is plainly manifest what advantage can be produced by the use of massage. In my opinion it should only be employed when a substitute for bodily exercise is required, provided that the latter for some reason cannot be carried out. General massage has not been well borne in many cases with which I am acquainted. Much of this is doubtless due to defective and unintelligent performance of the work, but the irritation which general massage may produce upon the nerves of the skin, may cause much discomfort and lassitude.

CHAPTER VI.

GENERAL RULES FOR THE EMPLOYMENT OF MOVEMENTS.

(1) THE movements which have been described, are in general adapted for all conditions, for all ages, and for both sexes. There are, no doubt, many exceptions in which these movements cannot be employed. For instance, it is necessary to avoid them in aggravated inflammatory and febrile conditions.

(2) They must be perseveringly continued in those cases in which they are prescribed, more especially where other exercises are not sufficiently performed. They must even be prolonged for a certain time after the main purpose has been attained, though in a modified way. This is the only way by which a lasting result can be secured. Every intelligent person can readily make this small and easy sacrifice for the sake of his health, and not discard the treatment because it is necessary to go on with it for some time.

A strong will is all that is necessary to combat any apparent reason for giving up the treatment until the movements have so formed themselves into a habit that they can scarcely be done without.

(3) The most suitable time for carrying out this treatment is before mid-day. After the treatment, a quarter of an hour should be allowed to elapse for rest, in order that the muscular irritation may pass off.

(4) The abdomen should, if possible, not be distended, and it is advisable to empty the rectum and the bladder

before the treatment begins. All tight clothing should be removed, especially about the throat, chest, and abdomen.

(5) Where there is any tendency to congestion of internal organs, or to hæmorrhage ; in important organic change of vital organs, or in ruptures, or any tendency to them ; the movements can only be attempted after careful selection and consideration.

(6) When the breathing and the beating of the heart have been markedly accelerated, one waits until the excitement is over before proceeding to the next movement.

(7) The intermissions are used for the taking of a deep inspiration. A quiet, full, and strong inspiration and expiration up to the fullest extent are taken, for which purpose it is advisable to place the hands on the hips. In this way the respiratory movements are greatly assisted by the decrease of the weight of the shoulder.

These movements are most important and beneficial ; by them the full strength can be developed, the health of the lungs preserved, and the force of the blood circulation can at once be improved. By this habit of taking every day a series of such respiratory exercises, the breathing capacity is also increased, even in the involuntary breathing which follows, and thereby the whole vital process is permanently strengthened and improved. These breathing exercises are specially to be recommended to those who have little exercise.

They only breathe to half the depth in their ordinary daily life, which prevents the due development of the muscles of the arms and chest. Some of the air cells of the lungs remain inactive, and, therefore, often in early age become degenerate. Therefore Phthisis prevails in youth and middle age, and Asthma in old age.

(8) The movements must be carried out gently, without hurry : with intermissions, but with vigour, with a forcible extension of the muscles, and precisely according to directions. Each movement must be perfect in itself, only thus can the full concentration which is intended be brought out, and the vital activity be conducted to the active part.

True success can only be attained by proper and thorough

execution of the movements. The feeling which immediately follows shows to all the distinction between a lax and a thorough execution of the movements.

(9) To attain the desired success of the movements depends in all cases upon the proper rhythm. This, above all things, differs in different individuals, and it is especially necessary that at the beginning the rhythm should be slow, and should be gradually increased according as the patient's strength increases. We should, however, beware of the maxim: "Much helps much." Only so far as the increase of the vital activity is in relation with the muscular movement and can keep pace with nutrition—that is, with the formation of new organic tissue—can real profit be obtained for the health.

Over-irritation of the muscle-fibres causes stiffness, disease, and organic change, and they become less fit for further use. In place of vital activity a reactive lassitude sets in. Fatigue must follow the treatment. During the period of rest, however, the normal condition is regained. No acute pain should be left in the muscles. These two conditions must be borne in mind to guide the operator, because elderly persons especially think they can do more than is profitable for them.

(10) Should the temperature permit, it is recommended to open the windows of the Institute and let in fresh air. Vigorous movement is always a sure preventive against catching cold. In all cases it is necessary to have a pure, not too warm air.

(11) The subsequent *modus vivendi* naturally depends upon the individual conditions of health. A mild diet is often necessary. Usually a simple and moderate diet is the best, with abstention from alcoholic drinks.

(12) In conditions of indisposition the treatment should only then be interrupted when the general health is obviously perverted. The menstrual periods of the female sex do not entail a complete cessation, but only certain limitations and modifications.

CHAPTER VII.

A FEW WORDS ON THE APPARATUS USED IN THE MOVEMENT CURE.

THE gymnastic appliances, the motive of which is to assist the operator during the execution of the movements, and to replace him, are very various in form and construction, and are divided into :—

- (1) Apparatus for active movements.
- (2) Apparatus for passive movements.
- (3) Apparatus for mechanical influences.
- (4) Orthopædic apparatus.

To give the names and descriptions of the various apparatus would take too much space ; we limit ourselves, therefore, to the description of the principal ones, with the corresponding movements.

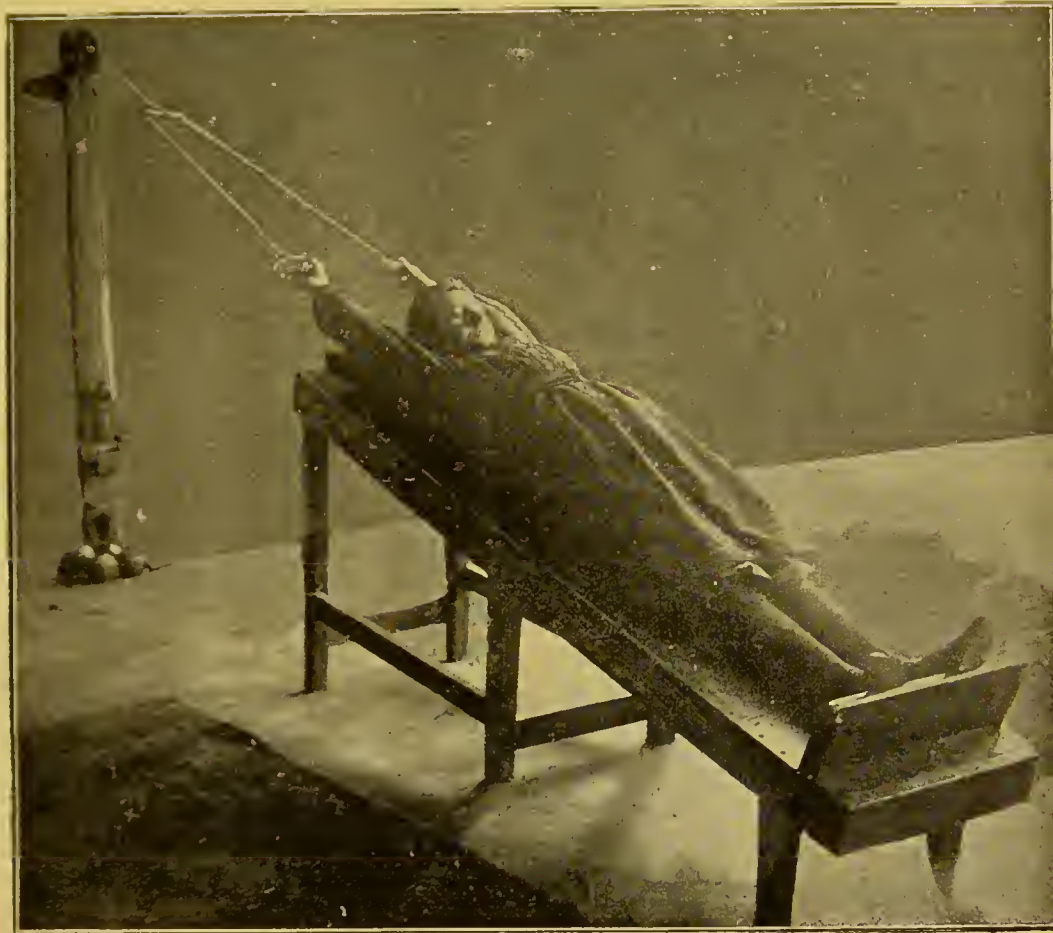


FIG. 31.—ARM CIRCUMDUCTION.

(1) *Arm Circumduction*. — For rheumatism in the shoulders, for hyperæmia, and as a commencing exercise for older patients.



FIG. 32.—CARRYING THE ARMS BACKWARDS.

(2) *Carrying the Arm Backwards.*—Acts on the rhomboids and the middle part of the circularis muscle; therefore is employed in cases of narrow thorax and to throw back the shoulders.



FIG. 33.—ARM ROTATION.

(3) *Arm Rotation*.—The fore-arm, wrist, and rotating muscles of the shoulder are strengthened. For stiff joints after fracture and dislocation.



FIG. 34.—FLEXION AND EXTENSION OF ARM.

(4) *Flexion and Extension of Arm.*—An abductive movement for patients suffering from a too strong flow of blood to the brain, lungs, and heart. Also for rheumatism and false ankylosis.

(5) *Flexion and Extension of Wrist.*—Stiff wrist-joint, following fracture and sprains, is benefited; also employed for rheumatism, writers' cramp, and for coldness and loss of sensation in the fingers.

(6) *Flexion and Extension of Knee.*—For rheumatism and atrophy of the extensor muscles, stiff knee and stiff hip-joint, general feeble circulation, &c.

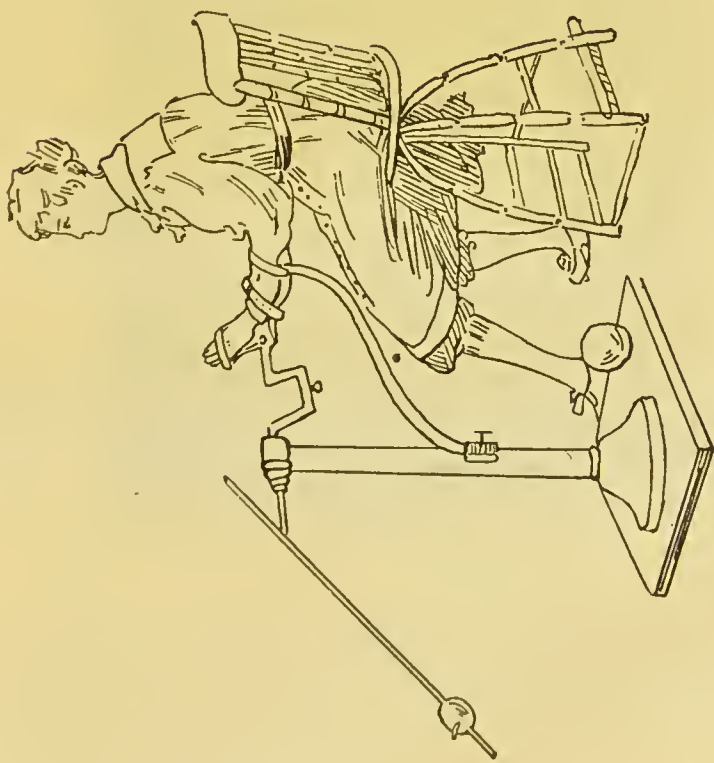


FIG. 35.—FLEXION AND EXTENSION OF WRIST.

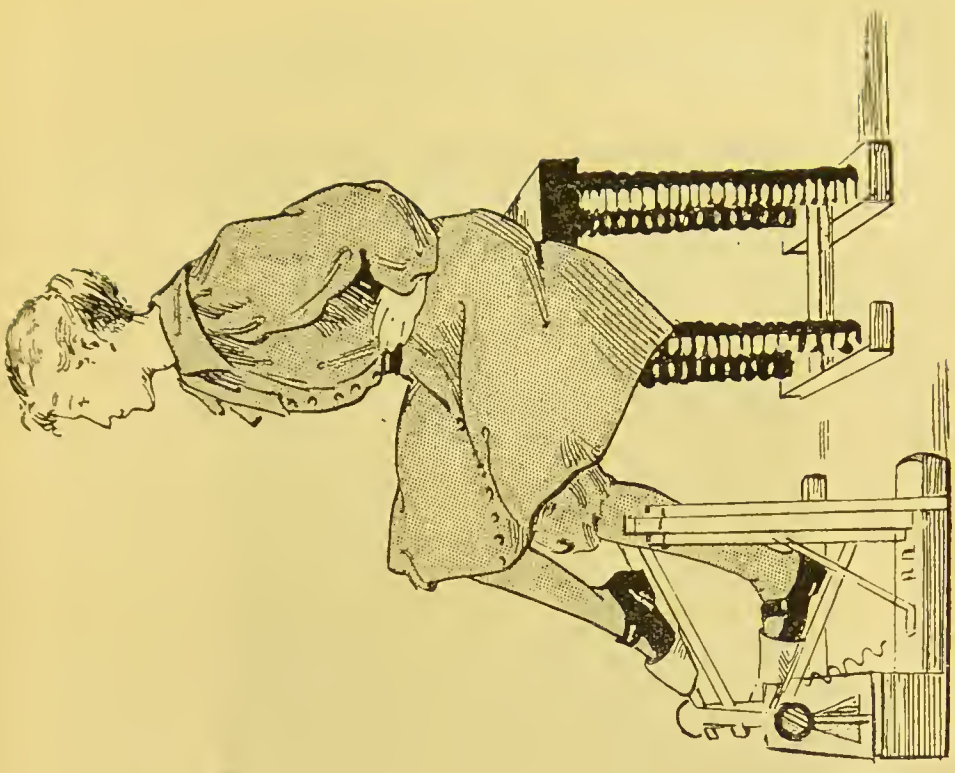


FIG. 36.—FLEXION AND EXTENSION OF KNEE.



FIG 37.—RAISING KNEE (SITTING).

(7) *Raising Knee (in sitting position).*—For synovitis, muscular atrophy, and rheumatic conditions, for constipation and delayed menstruation.



FIG. 38.—RAISING KNEE (HANGING).

(8) *Raising Knee (in hanging position).*—For the same affections, but this movement is more powerful, and should, therefore, only be practised on patients who have already been some time under treatment.



FIG. 39.—CIRCUMDUCTION OF LEG (SITTING).

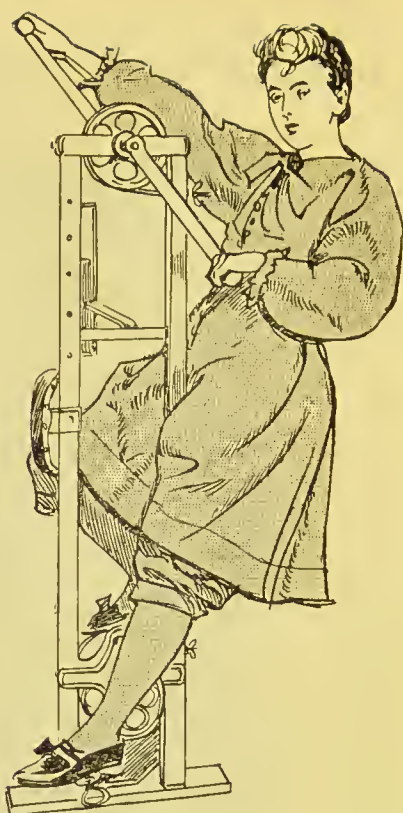


FIG. 40.—CIRCUMDUCTION OF LEG (STANDING).

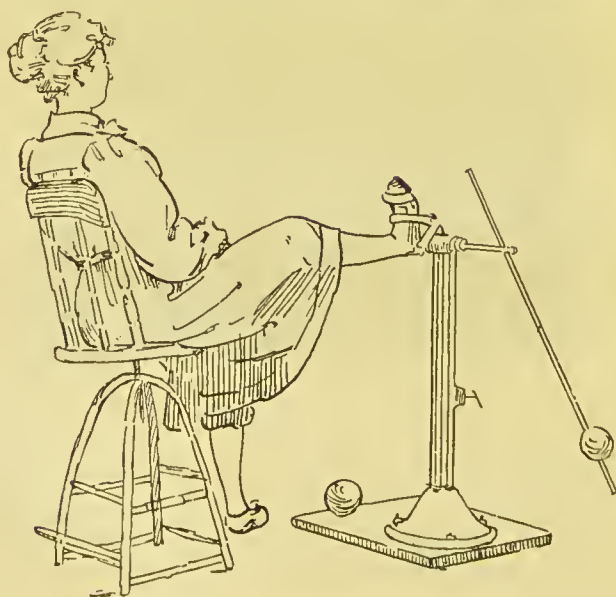


FIG. 41.—FLEXION AND EXTENSION OF FOOT.

(9) *Circumduction of Leg*.—For ankylosis of hip-joint, disturbances of digestion, and delayed menstruation. Has a remarkable effect on the mind. A good introductory exercise.

(10) *Flexion and Extension of Foot*.—For strengthening the ankle after fracture, dislocations, and general feebleness. For organic diseases of the heart, determination of blood to the head, cold feet, &c.



FIG. 42.—FOOT ROLLER.

(11) *Footroller*.—For cold feet and bad circulation generally.

(12) *Flexing and Raising the Trunk.*—For lumbago and general weakness of the trunk muscles, the whole musculature of the back is strengthened, the thorax expanded, and the abdominal organs are exercised.

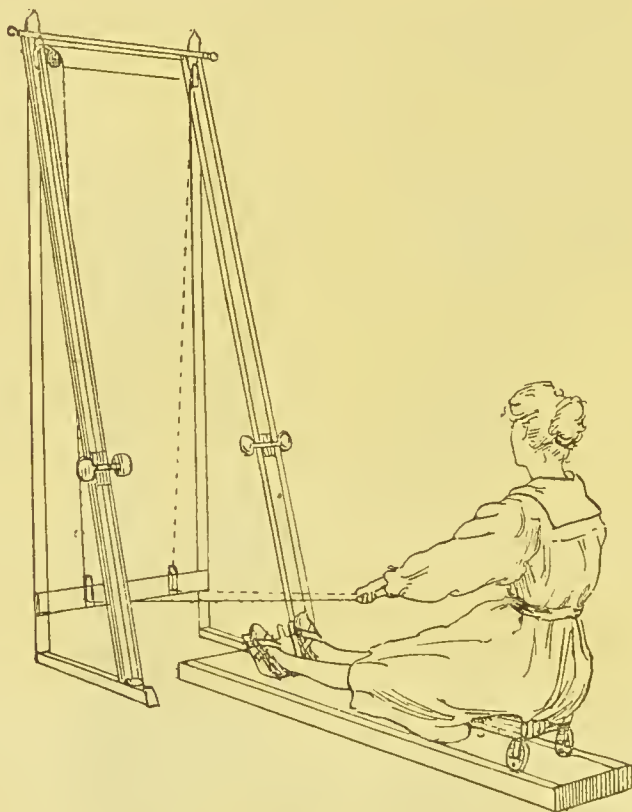


FIG. 43.—FLEXING AND RAISING THE TRUNK (SITTING.)

(13) *Moving the Trunk.*—The liver is alternately compressed and expanded, and the liver activity is thereby increased, also the activity of the organs of digestion, which is mostly disturbed by affections of the liver. Through the movements of the head this exercise acts as a soporific.

(14) *Trunk Erection.*—For strengthening the back, muscles, and for rheumatism, obesity, and neurasthenia.

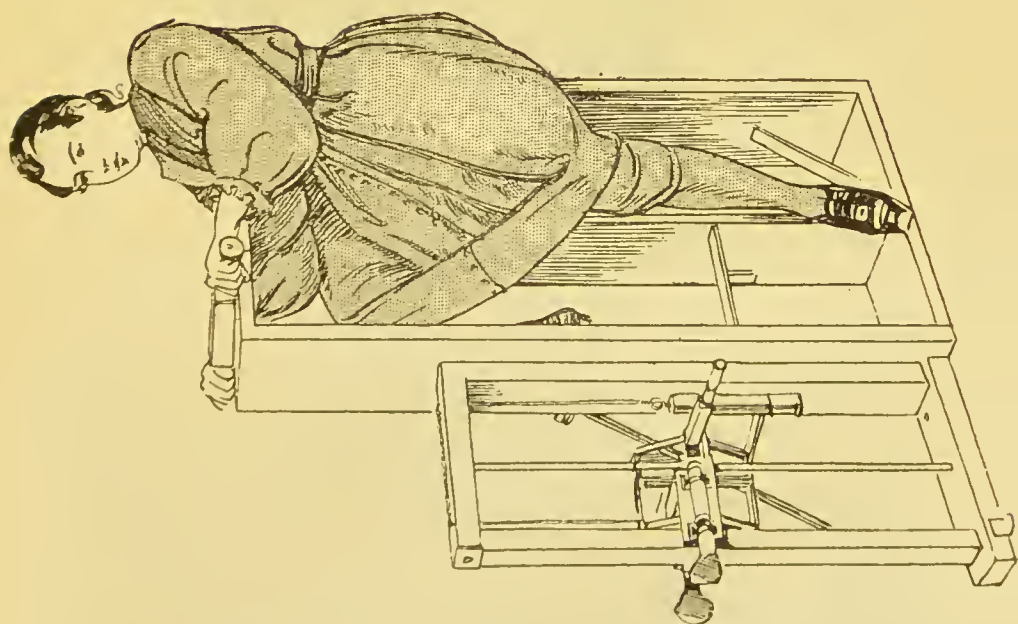


FIG. 45.—TRUNK ERECTION.

(15) *Rotation of the Pelvis.*—For disorders of digestion, diseases of the liver, and lumbago. Very refreshing to the mind.



FIG. 46.—ROTATION OF PELVIS.

(16) *Vibration Apparatus.*—Vibrations are employed for the various muscular and nervous diseases; vibration of the arm for writer's cramp, neuralgia, and muscular atrophy, vibration of the head for vertigo, vibration of the neck for diseases of larynx, vibration of abdomen for diarrhœa, of the tongue in apoplexy, &c.

(a) *The Large Vibration Apparatus* is the mildest and can be used for all parts of the body.

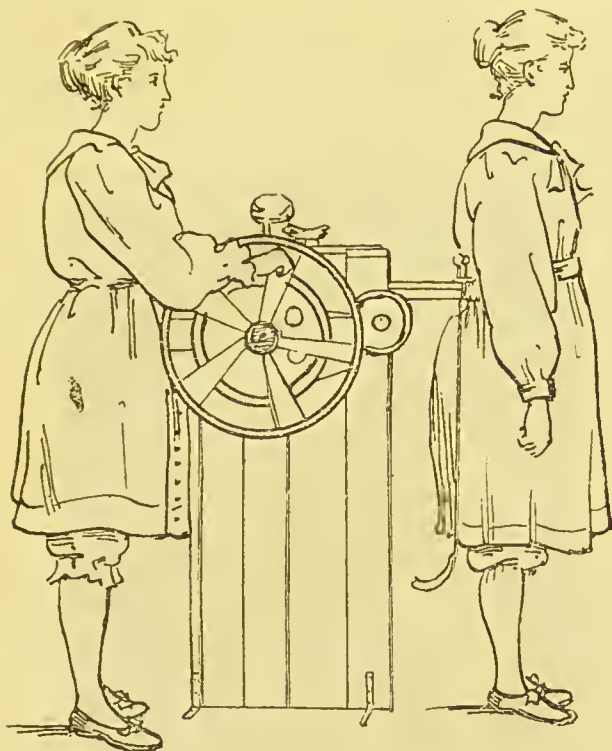


FIG. 47.—LARGE VIBRATION APPARATUS.

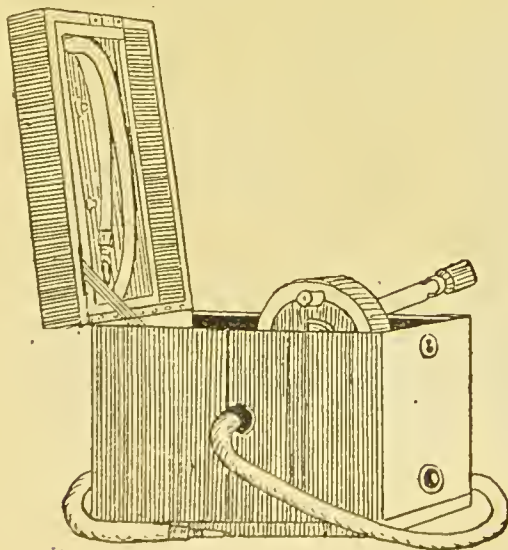


FIG. 48.—LIEDBECK'S VIBRATOR.

(b) *Professor Liedbeck's Stockholm Vibrator* produces between 800-2,000 vibrations per minute, at will, by raising the fly-wheel and has an intensive working power.

(c) *Vigor's Vibratory Riding Apparatus* is intended to act on the circulation, sluggish liver, and digestion, and to reduce corpulence.



FIG. 49.—VIGOR'S RIDING APPARATUS.

(17) *Expansion of Chest*.—For narrow thorax, asthma, chlorosis, and kyphosis.

(18) *Pneumatic Cabinet*.—For patients with emphysema and asthma. Natural expiration is aided, and the remnant of the used-up air, which usually remains in the lungs, is pressed out by the slow forward movement of the levers. Produces great alleviation of the breathing.

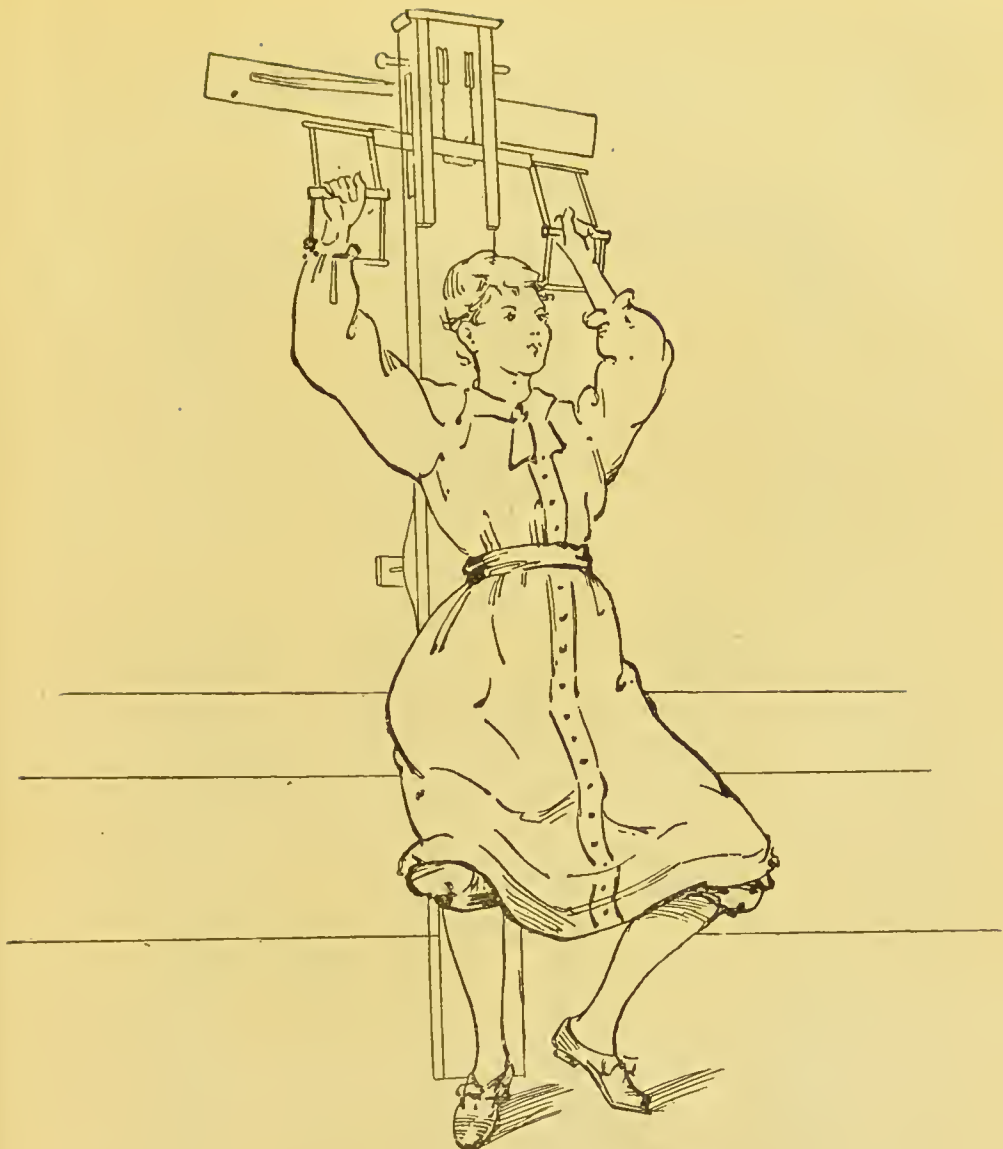


FIG. 50.—EXPANSION OF CHEST.

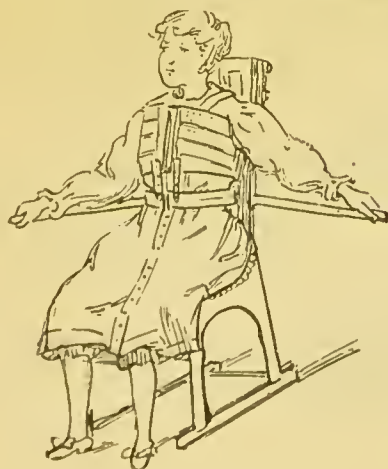


FIG. 51.—PNEUMATIC CABINET.



FIG. 52.—HEART HACKING.

(19) *Heart Hacking and Chest Forwards Pulling.*—Is employed in all forms of heart disease.



FIG. 53.—CHEST FORWARD PULLING.

(20) *Kneading the Abdomen*.—For corpulence, constipation, delayed menstruation, pain and trouble in the abdomen.

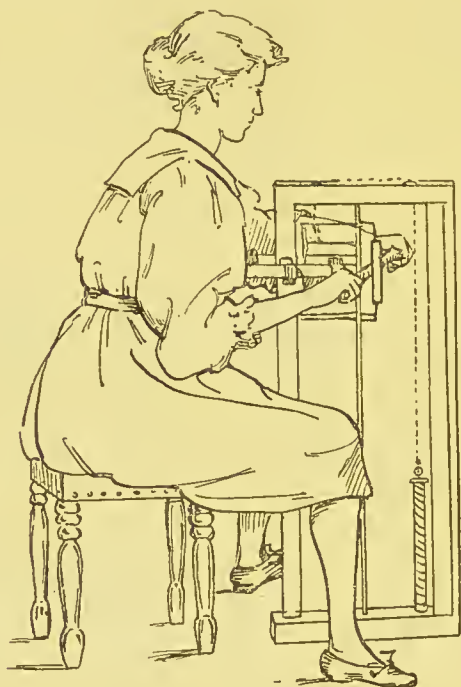


FIG. 54.—KNEADING OF ABDOMEN.

ORTHOPÆDIC APPARATUS.

These are intended for the various curvatures of the spine and for a bad carriage of the body, and have, it goes without saying, to be chosen with a view to each individual case. According to the necessity for strengthening the musculature of the shoulder, thorax, back, or abdomen, they are applied *unilaterally* (with corresponding freedom of the active position of arm) or *bilaterally*, with exactly-measured resistance. It is naturally impossible to draw up precise directions, since scarcely any one case is similar to another. In cases of Scoliosis one has to take special care that the patients are brought into such a position as to compensate the curve.

The chief forms of apparatus are :

- (1) Spinal suspension apparatus.
- (2*a*) Apparatus for stretching the vertebral column.
- (2*b*) Apparatus for stretching the vertebral column, with bending of the arms.
- (3*a*) Side stretch apparatus.
- (3*b*) Side bending.
- (4) Unilateral bending and stretching of the arm.
- (5) Bending and stretching of the arm, with knee bending.
- (6) Erect holding of spine, while marching on board.
- (7*a*) Suspension for enlarging dimensions of thorax.
- (7*b*) Circumduction of body.
- (8) Spine raising.
- (9) Spinal suspension, while raising the legs.
- (10) Resting the spine. Rest.
- (11) Stretching the spine, with extension of arm.
- (12) Swinging the spine (with arms at the same or at different heights, with legs fixed or hanging).
- (13) Forward pressure of shoulders, with extension of arm (jerk movement).
- (14) Rotation of back, with jerk movement.
- (15) Bending backwards and raising the back.



FIG. 55.—SPINAL APPARATUS : SUSPENSION.



FIG. 56.—HANGING APPARATUS FOR STRETCHING THE VERTEBRAL COLUMN.



FIG. 57.—STRETCHING THE VERTEBRAL COLUMN WITH BENDING OF THE ARMS.



FIG. 58.—SIDE STRETCH APPARATUS.



FIG. 59.—SIDE BENDING.



FIG. 60.—UNILATERAL BENDING AND STRETCHING OF THE ARM.

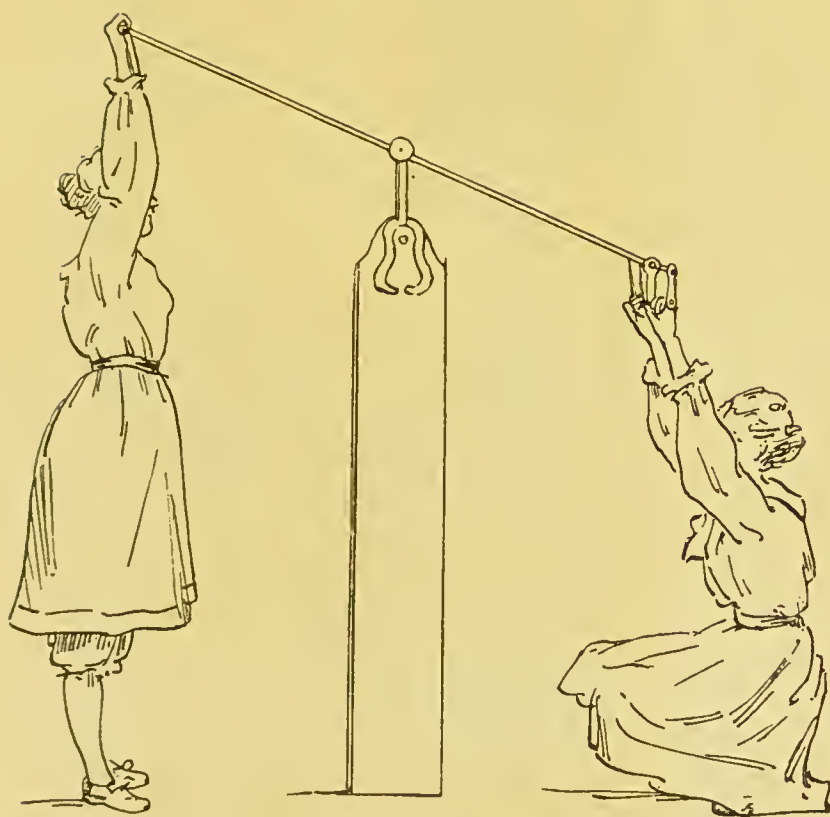


FIG. 61.—BENDING AND STRETCHING OF THE ARMS WITH KNEE-BENDING.



FIG. 62.—ERECT HOLDING OF SPINE WHILE MARCHING ON BOARD.

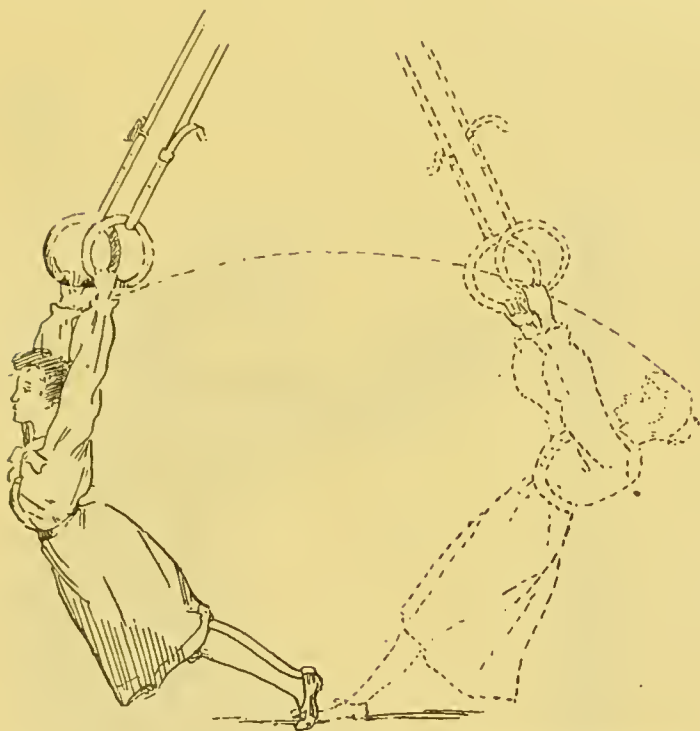


FIG. 63.—SUSPENSION FOR ENLARGING DIMENSIONS OF THORAX.



FIG. 64.—CIRCUMDUCTION OF BODY.

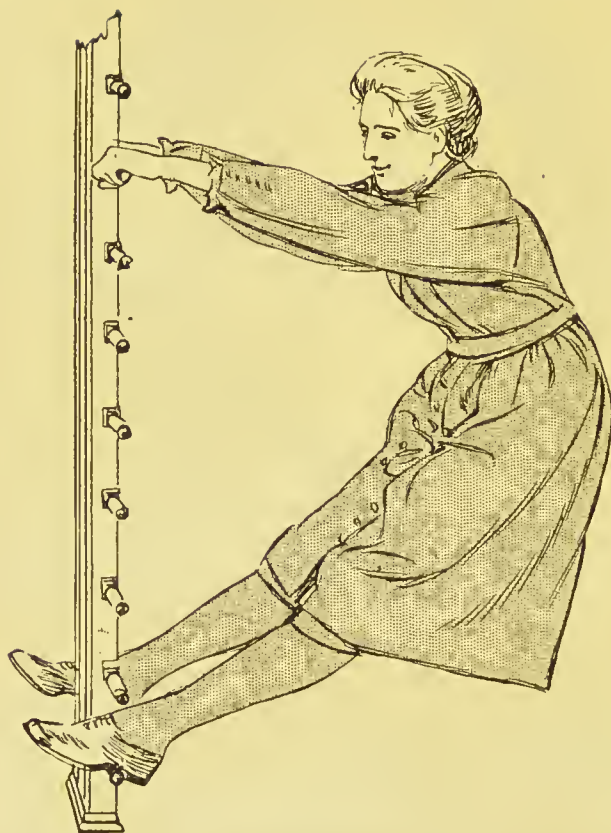


FIG. 65.—SPINE RAISING.



FIG. 66.—SPINAL SUSPENSION.

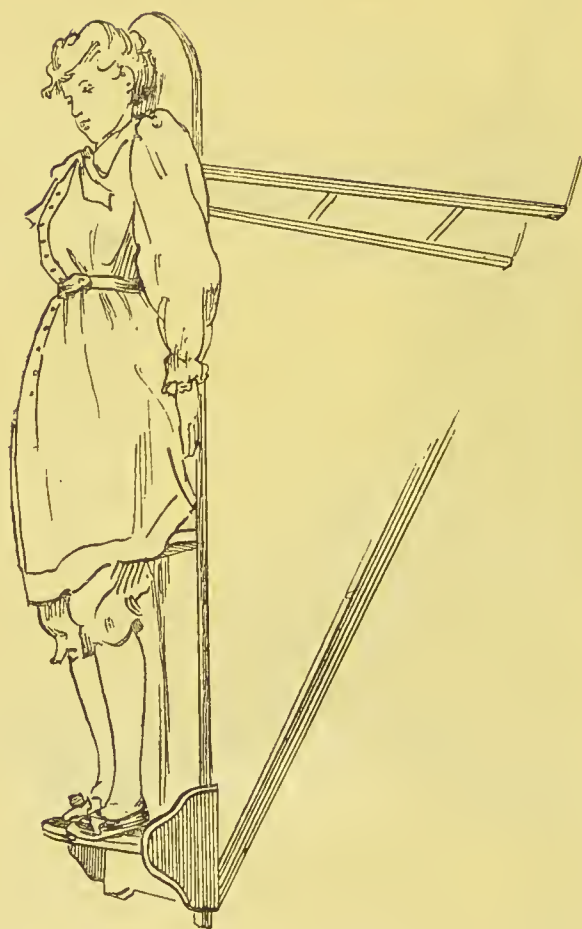


FIG. 67.—RESTING-BOARD.



FIG. 68.—STRETCHING OF THE SPINE WITH EXTENSION OF ARM.



FIG. 69.—SWINGING (LEGS FIXED).



FIG. 70.—SWINGING
(LEGS HANGING FREE).



FIG. 71.--SHOULDERS FORWARD PRESSURE.



FIG. 72.—ROTATION OF BACK.



FIG. 73.—BENDING BACKWARDS AND RAISING THE BACK.

As supplementary apparatus we may mention the massage couch (Plinthe) and the various forms of rollers, spine-rollers, comb-rollers, Swedish combs, muscle-roller, finger rollers, &c., all of which serve to assist the operator.

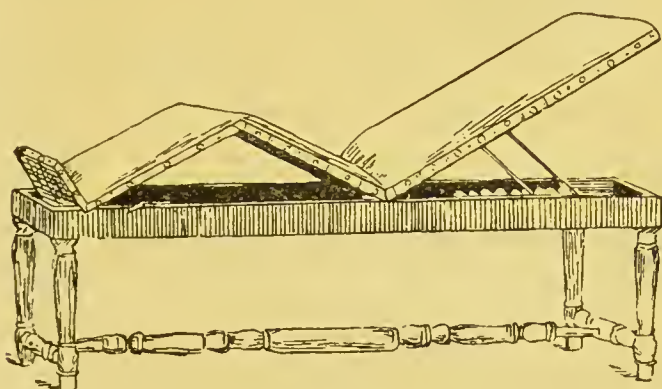


FIG. 74.—PLINTHE.



FIG. 75.—SPINE ROLLER.



FIG. 76.—SPINE ROLLER.

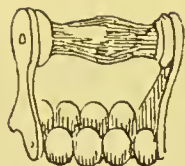


FIG. 77.—COMB ROLLER.



FIG. 78.—SWEDISH COMB.



FIG. 79.—MUSCLE ROLLER.



FIG. 80.—FINGER ROLLER.

CHAPTER VIII.

ON THE DISEASES FOR WHICH MOVEMENTS
AND MASSAGE TREATMENT ARE
ESPECIALLY SUITABLE.1ST SECTION.—DISEASES OF METABOLISM AND BLOOD
INTERCHANGE.

SINCE the mental and material parts of mankind do not represent two separate essences, but rather two different sides of a being intimately combined, each one necessarily influences the other. It is a fact confirmed by experience that a brain without nutritious blood loses its activity. It is shown in poorness of blood and in anæmia that the intellectual activity becomes weaker in proportion to the intensity of the disease.

It cannot be denied that mental activity is in proportion to the rapidity of the circulation of blood through the brain. It follows that the intellectual strength is greater when the body is healthy than it is in anæmia, and that in the latter condition mental fatigue is more readily brought about. If, now, nutritious blood is a necessary condition of intellectual activity, and if by the employment of bodily exercise the formation of blood and its circulation is improved, then proper bodily exercise must also powerfully influence the mental capacity and activity. It is necessary for the general well-being to bring the blood into a good state of circulation and to see that its composition is maintained at a high level

One of the most common diseases in this relation is :—

(A) Poorness of Blood and Anæmia.

Though poorness of blood and anæmia are not in all respects similar to one another, they possess so much resemblance that the symptoms of disease differ very slightly in each case. They may, therefore, be taken as one disease.

Anæmia is a chronic disease which exclusively prevails in the female sex. It is a perversion of nutrition of blood, characterised by a gradually-increasing diminution of the red and white corpuscles, whilst the other constituents of the blood—the fibrin and the albumen—remain in proper proportion to the quantity of blood. The normal quantity of red corpuscles is 13 per cent., and can fall as low as 4 per cent. The gradually-increasing paleness of the skin and the mucous membrane (the gums, &c.), fatigue, and slowly progressive weakness in the legs, palpitation upon slight exertion, headache and backache, dyspepsia, debility, mental irritability, leucorrhœa, or the loss of dark and thick blood during the menstrual period, are the most striking symptoms of anæmia.

Emaciation or dropsy form the last stage of the disease, unless a mode of life or of treatment perfectly conformable to nature is adopted. Generally, massage is used alternately with active and duplicated movements, accompanied by the breathing of pure fresh air, the ingestion of easily digestible and nutritious food, and the treatment of the skin by daily lukewarm baths, which greatly accelerate favourable results.

(B) Scrofula.

We have to thank the Paris Children's Hospital for the treatment of Scrofula by movements. General gymnastics were there first carried out by children, and these were followed by suitable movements of the arms and legs. The result was striking. The children very soon showed an improved complexion, firmer flesh, appetite increased, emaciation disappeared, and the general health was favourably influenced. Even some local ailments soon improved. The glandular swellings decreased, although

they had for a long time resisted every treatment. The children got more lively, left off their position of apathy, began to walk, run, sing, and play.

The means of alleviating and often curing this disease is general muscular activity, which acts on the circulation of the blood and the respiration, through which the most extensive perversion of nutrition can be made to disappear, with the aid of hygienic remedies and proper food, warm clothing, fresh air and strengthening baths. The tendency towards this disease can not only be inherited from parents, themselves scrofulous or suffering from other weakening diseases, but can also be brought about by debilitating influences, as, for example, through improper and insufficient food, by dwelling in small dark and damp rooms, by want of sufficient bodily exercise. The poor people who lack food, clothes, and healthy homes supply a numerous contingent suffering from this disease.

It is chiefly found in children and young people, but it can also attack older people. The symptoms are generally eruptions on the face and on the head of various extent. The mucous membranes have a tendency to catarrh, *e.g.*, running at the nose, bronchitis, and catarrh of the stomach. The lymphatic glands are swollen or inflamed. Very often inflammation of the external part of the eye, of the eyelids, or of the conjunctiva occur, and an opacity of the cornea is formed, and both the internal ear and the external ear become susceptible to inflammation.

(C) *Gout.*

Gout is a disease not dangerous to life, but very painful; it is generally chronic, but also occurs in single attacks. Premonitory symptoms consist of mental depression, disturbed digestion, anorexia, palpitation, angina, and a deposit in the urine. Now and then attacks come on suddenly in the night without any warning in the form of most acute pain in the ball of the great toe, which swells and inflames, whilst the urine assumes a dark red colouration, with a thick deposit. Towards morning the pain ceases, but returns with renewed vigour the succeeding night.

After several attacks the patient becomes convalescent, and the swelling of the joint diminishes. Where the cases are less acute they last for weeks or months, and implicate several joints. A disordered condition of the general health is a consequence of these gouty attacks, in combination with digestive troubles. That is called gout in its chronic form. The blood of gouty patients contains always a quantity of uric acid combined with soda ; and at length chalky masses form deposits in and around the gouty joints. By modifying the mode of life, by restricted but nutritious diet, and the avoidance of alcohol, it is possible to prevent the attacks. The task of exercising the muscles and of exercising the functions of nutrition falls upon the proper regulation of movements.

(D) *Obesity or Corpulency.*

A great number of patients have visited my institute on account of greater or less marked obesity, or tendency to put on fat, and for the conditions which are connected with this condition. That the movements adapted to these conditions fulfil a curative purpose demands no demonstration, for an insufficient amount of exercise and an unsatisfactory diet are generally the causes of the disease.

The superfluous fat must be oxidised by means of the activity of the muscles, and by increased capacity for inspiration, whilst the diet must be so arranged as to prevent the further formation of fat. Professor Ortel recommends over and above this *Terrain Kuren*—that is, graduated up-hill exercise, which is certainly effective ; but unfortunately mountains or hills are not always at our disposal, and therefore it is not universally practicable.

The Swedish movements can, however, be used in all circumstances, and for many years they have proved themselves to be the most effective remedy against obesity ; this form of treatment can be employed for any stout individual. Even the feeblest and most delicate ladies, for whom a short walk on a level surface is too much, and cases of breathlessness, with a weak heart, can be treated,

without endangering them in any way, by means of the Swedish movements. We are in a position to proceed according to circumstances from gentle to strong movements. It is evident that in those cases in which only a slight amount of exertion is put upon the patient no great reduction in weight can be obtained in the first few weeks ; but with increased capacity for stronger movements a satisfactory cure can be obtained.

Those who are very obese are not seldom the most difficult patients to treat, however simple the treatment may be. They have little conception of the difficulties and no patience ; they expect after a week or two a manifest and considerable decrease in weight ; they keep the weight always in view, and forget that the manifold circumstances, in connection with the corpulency, have experienced a considerable improvement. Besides, they are often committing errors of diet, and do not abstain from sugars, starches, and alcohol.

Passive movements, which improve the circulation generally, form the starting point of the treatment, and are followed by active movements and movements of resistance. Beatings, strokings, and kneadings of the abdomen are to be recommended, because constipation is usually connected with corpulency.

By means of this treatment, greater vigour and increased activity is produced, and proves itself sufficient to prevent further formation of fat, because it tends to increase the combustion of the adipose tissues.

The decrease in the weight will be from four to eight pounds a month, but it is manifestly governed by the behaviour of the patient.

2ND SECTION.

DISEASES OF THE NERVES AND OF THE BRAIN.

Science informs us that an inactive nerve becomes relaxed, becomes fatty, and at last its irritability is lost. Daily life furnishes us with numerous instances of speaking proofs of the influence of movements upon the nervous

system. A remarkable difference can be seen between workmen of different trades in town or country, and such classes of the population as do not have a sufficient amount of bodily exercise, whatever the reason may be.

The former, though, perhaps, not quite free from disease, seldom suffer from neurasthenia in the true sense of the word. But how entirely different is it with those who, on account of occupation or for other reasons, take but little bodily exercise. We observe here great susceptibility to external as well as internal influences. An ordinary noise, a sudden impression from the light, is annoying to them, so are changes in temperature. Headaches, facial neuralgia, backache, abdominal pain, palpitation of the heart, are very often the concomitants of nervous debility. There is a tendency to cramps and convulsions, and also to debility and atony of the organs.

In order to emphasise the influence of bodily exercise upon the nervous system we must enquire into the influence of the nervous system on movement, the relation of the nervous system to the other organs. If, for instance, an arm is flexed involuntarily, and impulse of will proceeds from the brain cells and is conducted by the nerve motion to the muscles, the muscle movement, thus produced, is again perceived in the brain by the help of a nervous stimulus.

Nerve centres, as well as peripheral nerves, are thus brought into activity. If we look more closely into this, we find that by these means the blood circulation is also influenced and a greater supply of replacing material is supplied to the acting nerves as well as to the muscles. Therefore, bodily exercises, used in the proper manner, possess from physiological reasons a powerful influence upon the strengthening and development, as well as the preservation, of the normal condition of the nervous system. Experience also teaches that suitable bodily movement is an undoubted remedy for the cure of nervous troubles, such as those arising from over-excitement, from pains in the nerves (neuralgia), from loss of feeling (anæsthesia) of peripheral origin ; from convulsions, cramp, etc.

(A) Neuralgia.

All pain arises from irritation of the nerves of sensation. The cause of the irritation can either not be determined or affects the nerve trunk, it may be by fatigue, or by pressure of foreign bodies, or from stretching. Facial neuralgia is most common in women; it can be distinguished from migraine by noting that the migraine extends over a greater portion of the head and occurs periodically, with intermittent attacks of longer or shorter duration, and is accompanied by a feeling of malaise.

Among the causes may be mentioned cold, draughts, damp rooms, general feebleness, constitutional disturbance, anæmia, etc. The pains are burning, boring, cutting, and may increase to a very acute degree, and are restricted to single "points."

Neuralgia of the nervous tissue of the arm requires special notice. The pains show themselves suddenly, especially at night time, and are considerably increased by pressure, movement, or only upon a slight touch. The pains can be felt over the shoulder-blade, and may extend to the upper arm or to the throat or neck, and may be felt either on the external or internal aspects of the arm.

Finally, they may arise near the elbow and extend to the edge of the fore-arm, and even to the fingers.

The causes of neuralgia of the nerves of the arm are manifold; cold, powerful external influences, over-exertion of the arm; then disease of the heart, liver, spleen, cancer of the breast, etc.

It is evident that in treating these diseases the causes must, in the first instance, be considered, and the remedies must naturally be adapted to them.

Massage is successfully applied where internal organs do not form the real disease nidus, and it should be performed by preference by effleurage and tapotement along the course of the implicated nerves. Where mechanical influences can be used, frictions and kneadings, conjoined with movements, are called for.

(B) Migraine.

This disease, which mostly affects the female sex, occurs very often every fourth week, and usually at the menstrual period. It consists of acute pains over one-half of the head. It is, however, not yet exactly determined whether the pains arise from irritation of the sensory nerve centres in the cerebral cortex or of the sympathetic fibres which accompany the vessels of the brain, or whether they originate in cerebral fibres.

The causes of this disease, which is inconvenient, if not even dangerous, are varied. We may specify general nervous irritability, hysteria, dyspepsia, sexual troubles, mental over-exertion. Immoderate drinking of coffee and tea also helps to develop this disease.

Two forms are distinguished :—

(1) One is produced by sympathetic nervous troubles, which regulate intestinal movements, movements of the blood, of the lymphatics, and of the glands. This causes a reddening of the painful area of the head and ear, with contraction of the pupil; the conjunctiva seems to be reddened at the same time, and even bloodshot. The temporal artery is enlarged and the pulse soft, and the sensitiveness of the affected area is greatly increased.

(2) The other is produced with symptoms of spasm of the sympathetic.

In this form the affected facial area is pale, the ear is pale and cold, the pupil dilated, and the temporal artery on the same side is bounding and stringy to the feel.

Occasionally salivation, the voiding of dark-coloured urine, and diarrhoea are concomitants of this condition.

It may last for years, but may disappear with advancing age. Meantime, the patient may be attacked by a fever more or less acute, and the migraine more or less disappears with its cure.

The natural treatment of the disease has to take into consideration, above all, the strengthening of the nervous system, by creating better conditions of nourishment and by the removal of troubles in the circulation of fluids by the aid of the natural methods of cure.

Massage of the throat in the first form of Migraine, and strong friction over the temporal region in the second form have proved to be of excellent effect. Those muscular parts especially which are thought to be swollen in consequence of local inflammation should be treated as largely as possible by friction and rubbing.

(C) *Sciatica.*

The very extensive pains which are called Sciatica arise from the sciatic nerve, which runs down the back of the leg. The pain lies always at the posterior aspect of the thigh. It may be in the cutaneous branches or in the main sciatic trunk. It may also be due to an affection of the tibia, in which the pain spreads along the tibia externally and anteriorly and may extend to the toes. The pain is less frequently cutaneous in its origin. In most of the cases the pains in the thigh affect only one portion, in which they are suddenly felt at various spots, and also extend along the course of the nerves. The pains are not continuous, but intermittent at shorter or longer intervals. Sometimes the pains are limited to certain points, in the form of acute burning and tearing, and they are then much more painful.

The attacks may occur at different times, and are often followed by pains in the back, stomach, and calf.

Sciatica may be caused by cold, imperfect circulation, accumulation of waste material in the large bowel, mechanical pressure, rheumatism, inflammatory processes in the nerves themselves, ovarian tumours, etc.

Sciatica mostly becomes chronic and is very difficult to treat; sometimes relapses come on after a long interval. The disease can often be improved by skilful observation of its causes, even in severe cases, and certainly by friction along the course of the great sciatic, by kneading and tapotement. The sciatic and its branches must be subjected to strokings, pressure and friction. The muscles supplied by these nerves are to be kneaded and treated with movement.

(D) Hypochondria.

This is a peculiar disease in which the patient continually imagines the existence of some incurable disease, and is constantly in a morbid mental condition. Children are exempt from this disease, the cause of which is mostly the hereditary and melancholic temperament. It is often noticed that circumstances which lower the strength, *e.g.*, debauchery, tend towards this disease.

Unsuccessful plans, melancholic surroundings, worries and troubles, chronic catarrh of the stomach and intestines also play their part in bringing on this disease. Wealthy people are often sufferers, because they are inactive and in need of regular occupation. The disease occurs mostly between the age of 20 and 40, and is often accompanied by stomach trouble of a chronic kind. This has usually been the primary disease; it is found but rarely as a result.

The real mental condition of the hypochondriac is easily observed. Its characteristic is the great difference existing between physical signs and the complaints of the patient. The hypochondriac imagines every possible thing; he consults many physicians; many remedies are taken without allowing time for any to act.

Plainly, the nervous system suffers from an extensive perversion of nutrition, though it is apparent that organic changes are not present.

The disease is never dangerous to life, but nevertheless it is one of the most troublesome maladies. The patient neglects his prescriptions, and it is most difficult to keep him long enough to do anything by means of the movement cure. The movements are to be practised in view of the accessory symptoms. But in general the treatment should be muscular exercise, so that both the physical and psychical conditions may be improved.

(E) Hysteria.

Troubles in the sympathetic nervous system call forth the symptoms of this disease.

It occurs almost entirely in the female sex, seldom in

children or in the aged. The irritable constitution of body and the neurotic temperament cause a tendency to this disease.

Its causes are the following :—

A mode of life or an occupation in which the feelings and imagination are stimulated whilst the intelligence is less exercised, and in which the bodily powers remain passive.

Diseases of the ovary, uterus, anæmia, &c.

It is impossible to form a real picture of this condition because it not only varies in different individuals, but also in one and the same person. Excessive joy or excitement, anxiety, and despair are among the psychical troubles which induce the disorder.

We see, among other nervous symptoms, headache, irritation of the spinal cord, nervous pains in various spots, cramps, fits of weeping, laughing, and convulsions. The patient is often troubled with palpitation and spasmodic coughing, colic and cardalgia are present as digestive troubles. Organic diseases of the sexual organs are frequent.

The symptoms may be similar to those of epilepsy, though in hysteria neither the complete loss of consciousness nor the venous congestion of the face are observed during the attack.

An energetic and well-directed movement cure, lasting a sufficient length of time, is one of the most effective remedies. The patient must persevere, because the disease shows great obstinacy and tendency to recur.

(F) Hyperæmia of the Brain.

Hyperæmia of the brain and its meninges, which arises in consequence of increased blood pressure in the brain or of diminished circulation of the return blood, may be due to many circumstances. It is to be found in inflammatory and feverish diseases, as, for instance, in measles, scarlatina, small-pox, in typhoid, and so forth.

Further, in dilatation of the left ventricle of the heart, after the abuse of alcoholic liquors, after mental excitement, after sudden chills, in paralysis, through the effects of too

high or too low a temperature of the head, through forced and prolonged expiration, through throat tumours, liver tumours, in consequence of lung disease, &c.

The usual symptoms of hyperæmia of the brain, are headache, excitement, restlessness, pain in the face and ear, vertigo, tinnitus aurium, eclampsia, constriction over the forehead and in the orbits. In the more severe cases, unconsciousness, delirium, convulsions. All possible degrees can be met with, which must be treated according to the character of the disease.

Certain hyperæmias, or so-called congestion of the brain, when not arising as accessory to fevers or inflammatory diseases, can be dealt with, and excellent results obtained, by massage of the throat, by assisting to conduct the blood to the heart in the most natural way. It acts in some senses like venesection by reducing blood-pressure, although not resembling it entirely because the excess of blood is not withdrawn from the general organism, but remains in some other part of the circulation. A quicker or easier mode of treatment can scarcely be found for a form of congestion, which not unfrequently occurs from sunstroke.

In congestion of the brain it is very important that we take into consideration that it is impossible to cure all cases by this method, for the very simple reason indeed that organic changes may have occurred which cannot be improved.

(G) *Cerebral Anæmia.*

Cerebral anæmia is met with as well as hyperæmia. The diseases which so often fall within the scope of movement treatment, such as general debility, nervous debility and vertigo, nervous irritability, chronic or intermittent headache, are in most cases caused by general anæmia which is specially manifested in the central nervous system.

A contracted state of the vessels going to the brain must necessarily diminish the quantity of blood which reaches it. This contraction may arise from perverted innervation of the vessels. Mechanical contraction of the larger

arteries, which convey the blood to the brain, conduces to the diminished blood supply.

The symptoms are those of congestion, headache, photophobia, tinnitus aurium, *muscæ volitantes*, tendency to vertigo, especially upon assuming the erect posture. Sometimes cramps, involuntary emotional conditions (crying or laughing).

Psychically : Stupidity, carelessness and want of aptitude are noted.

Physically : Fatigue, general impaired action of the bodily functions. The cerebral anæmia is only distinguished from hyperæmia by paleness of the face and lassitude. Stimulating and strengthening movements are to be employed.

(H) *Apoplexy.*

Pressure on the brain by blood effusion is the cause of apoplexy. It may be due to rupture of the smaller blood vessels. The blood gushes over the cerebral substance and causes its destruction. This form is called capillary apoplexy. On the other hand, collection of fluids may so dilate the brain that it becomes pulpy. The pressure arising from this is called serous apoplexy.

Further, blood may be effused between the meninges by congestion of the pia mater, as well as into the cerebral cortex in small portions or over larger areas, so that the whole brain is pressed upon by effused blood and the cerebral cavities seem to be filled from behind.

We may mention as premonitory symptoms of such a severe disorder, drowsiness, headache, vertigo, forgetfulness, sickness and vomiting, paralysis of muscles, and sometimes convulsions. Subsequently, unconsciousness supervenes, and paralysis of the side opposite to the blood effusion. Sometimes the patient drops as if struck by lightning, or unconsciousness and paralysis come on gradually, or consciousness may not be lost and paralysis may be the only symptom.

Massage is often accompanied by most favourable results in cases of paralysis. The patient having been

elevated, effleurage of the throat is resorted to, and the paralysed extremities or other parts implicated are treated by strokings, kneadings, and frictions, which are followed by duplicated active and passive movements.

(1) *Epilepsy.*

We have often cases of this disease under treatment, but it is difficult to effect a complete cure. However, a visible improvement may be attained in most cases.

As a cause of the attacks irritation may be mentioned. This irritation proceeds from the base of the brain or the medulla oblongata, and not from the hemispheres. It has often been suspected that a dilatation of the arteries of the medulla oblongata produces the irritation, but that has not been definitely proved.

The disease is hereditary and prevails in most cases between the age of 14 and 30. Severe mental emotion, irritation of the brain and spinal cord, may produce the attack.

The attacks either supervene suddenly or are preceded by a sensation of cold as well as loss of sensation in the arms and legs. The character of the attacks varies. It may consist of giddiness, which quickly passes off, or of severe convulsions, lasting some seconds, minutes, or even longer. It may be that the attacks recur after some hours, days, or even months. The characteristic of the attack is the loss of consciousness, tonic spasms, duskiness of the face, frothing at the mouth, contraction of the fingers over the thumb. The stupidity and sickness may last for some time after the attack.

The disease ceases sometimes of its own accord and sometimes after appropriate treatment. The hope of a favourable course of the disease is greater in the young than in adults. The hereditary tendency diminishes the prospect of cure. The condition of health must also be taken into consideration in the treatment. The movements must be chiefly directed away from the head.

(K) Writer's Cramp.

Certain spasmodic conditions produced by over-exertion of special nervous and muscular elements may be improved by treatment of muscular groups, since one strengthens at the same time those muscular parts which carry out the opposite action and thus form their antagonists. When, for instance, the flexors are diseased, they are treated by massage, whilst the corresponding extensors are strengthened by appropriate movements. Or, *vice versa*, if the extensors are affected they are massaged and the flexors strengthened by movements. Thus one may successfully improve diseases of the flexors of the three first fingers, or of the thumb only in cases of writer's cramp.

This form of paralysis very often affects writers, piano players, authors and type-setters. Writers' cramp may be *tonic*, *i.e.*, a muscular spasm lasting over some time, or it may be *clonic*, continuous contraction and relaxation of muscles. The most frequent form is tonic contraction of the flexors, in which the thumb is flexed towards the inside, and the hand—sometimes the fore-arm—is prevented from writing, in consequence of cramp-like tremblings.

The tonic spasm or contraction of the extensors is less frequent, and is characterised by a sudden extension of the fingers and dropping of the pen in trying to write.

In the clonic spasm of the extensors, the forefinger constantly performs extensions upwards.

The development of the writer's cramp is gradual, and therefore the disease is more severe.

It has been suggested before that this may be cured by massage and movements, but at the same time the patient's general condition must be strengthened, and we have to impress upon him the necessity of quitting the occupation which has caused the trouble.

Cramp of the Calf of the Leg.—Another form of cramp, which, if it often occurs, may be productive of great annoyance, is cramp of the muscles of the calf of the leg. It affects the gastrocnemius and the other calf muscles, and often extends to the muscles of the feet. It prevails in most cases during the night and is accompanied by severe

pains. In elderly people it may become chronic and can arise from trifling causes.

We may mention as its real causes, over-exertion of the calf muscles, arrest of blood circulation in consequence of too tight shoes, boots, or garters, or any unusual abdominal pressure. As accessory causes may be mentioned, sudden change of the position of the limbs or sudden extensions of them, or cold feet.

The cure of this cramp is easily attained by powerful frictions, strokings, and movements of the respective muscular parts.

3RD SECTION.

DISEASES OF THE ORGANS OF CIRCULATION.

These are dealt with by me in a separate treatise, and I beg those of my readers who are especially interested in heart diseases and their treatment to procure this small volume.

4TH SECTION.

DISEASES OF THE ORGANS OF RESPIRATION.

A roomy and elastic thorax is the external manifestation of powerful lungs. Workmen and those persons who have been educated physically carry the proof in their own person of the fact that the lungs develop by bodily exercise, whilst the narrow inelastic thorax of those who have but little bodily exercise indicates exactly the opposite. Through the respiration, oxygen is taken from the air to be distributed by the blood into the different parts of the body. The freer the contact of the air with combustible material, the more the combustion is kept up. Therefore the more abundant the supply of oxygen in the organism the more abundant is the exchange, and the waste material is brought into such a condition that it is enabled to enter the blood and then to be excreted by the lungs, skin, kidneys, intestines, &c.

Inspiration has also a regulating influence upon the blood circulation. The lungs in their natural condition

cannot fill up the whole chest space. It is the air which they contain which stretches them and presses against the inside of the chest wall. The elasticity of the lungs resists to a certain degree this expansion, and thereby a diminished pressure is produced on the other organs of the thorax, especially the heart and greater vessels. Thus a power of suction is exercised upon the venous blood.

Bodily movements are also required in order to develop the lungs and produce a freer respiration, a quickened flow and increased formation of blood are produced, as well as increased metabolism. It is evident from this that appropriate movements acting upon the respiration are important remedies for the cure of the various diseases of the respiratory organs.

(A) Chronic Catarrh of the Bronchial Tubes.

Chronic catarrh of the bronchial tubes takes the foremost place among the catarrhal conditions of the organs of respiration, upon which movements exert a specially favourable influence. This condition arises mostly in consequence of lung disorders, of inflammation of the air cells; of portal congestion in diseases of the liver; as a result of anæmia, acute bronchial catarrh, the inhalation of dust, and so forth.

It is characterised by prolonged cough with expectoration, crepitation in the chest and dyspnœa, and is seldom accompanied with fever symptoms. This trouble has to be taken seriously when it is followed by an abundant and purulent mucous expectoration.

Rapid tapotement of the chest, flapping or punctuations, strokings between the intercostal spaces, kneadings of the muscles of respiration, varied with frequent deep respiration, produce much benefit.

(B) Asthma.

An obstinate disease, though not dangerous to life, is spasm of the bronchi, *i.e.*, asthma, produced by a special irritation of the fibres of the motor fibres of the vagus

nerve. This nerve, known as the *wanderer* or the nerve which supplies the lungs and the stomach, also supplies the larynx and the pharynx; it supplies one branch to the auricular region, and transmits through its fibres sensation to the organs of respiration, to the posterior surface of the pinna, to the œsophagus, and to the stomach.

The most important symptoms of this disease (asthma) are severe attacks of dyspnœa, which occur mostly during the night, and after which the patient feels as well as ever. The patient feels in the course of the attack as if the chest were compressed, inspiration and expiration are wheezy, both in the larynx and in the trachea. The difficulty of breathing produces great anxiety. The patient jumps out of bed and rushes to the window for fresh air. The liver and heart are depressed, the face during the attack assumes a bluish red hue, it swells and is covered with a cold sweat, and only after the paroxysm, which may often last for several hours, is over, do all the other symptoms disappear and the patient falls into a prolonged calm sleep.

In most cases the attack comes on for a series of nights together, until at length it passes off of its own accord. The period of intermission which follows is of various duration; it may last for some weeks, but often for some months.

Gout is supposed to be a cause of asthma, though in many cases it cannot be detected. The same may be said of hæmorrhoids, kidney disorders, hysteria and hypochondria, or asthma may be hereditary.

The treatment of this disease naturally depends upon its causation, and one cannot be far wrong in using the treatment of nature as far as possible. The breathing of pure fresh air night and day, non-irritating foods, daily attention to the skin, consisting of rubbing after the bath, exercises in the open air, massage of the chest and especially vibrations, tapotement and hackings come into consideration.

Beyond this, movements and massage can be employed in whooping cough, emphysema, angina, and as an after treatment of pleurisy.

5TH SECTION.—DISEASES OF THE DIGESTIVE ORGANS.

It is a common experience that exercise increases the appetite. This in turn causes, under normal conditions, increased metabolism and increased health of the organs of digestion. Exercise is indispensable if the digestive organs are to be kept healthy and strong. The mechanical as well as the chemical powers are increased by exercise. Only at the beginning and at the end of the digestive tract do we find muscles not dependent on the will, but which are influenced indirectly by voluntary movements. It is also shown that movements, which act strongly on the abdominal muscles, have also a considerable influence on the muscles of the digestive tract. This is in accordance with physiology. Exercise increases the blood supply to the digestive tract, and it is understandable that it brings about an increased secretion of the digestive juices.

It is evident that suitable exercise is advantageous to development and preservation of healthy digestive organs.

Chronic catarrh of the stomach, constipation, piles, liver disease, gallstones and various other conditions may be cured and improved by regulated exercises.

(A) Chronic Catarrh of the Stomach.

The stomach is very often dilated in this disease and its walls are generally thickened; the mucous membrane has a reddish brown colouration with congested patches. The mouths of the glands may either be dilated or contracted. Ulceration of the stomach may also be formed in chronic catarrh.

The hereditary tendency towards this disease cannot be gainsaid, as it obviously occurs more often in some families than in others, without any conditions to account for it.

The stomach suffers when too great quantities of food are taken, and especially when the food is difficult to digest. When the food is not normally digested, the mucous membrane is irritated and chronic catarrh of the stomach easily supervenes. Partaking of food too hot or too cold has a similar influence, also the taking of strong sauces, tea, coffee, strong wine, and alcohol.

Debilitating diseases and diseases of blood formation are often accompanied by catarrh of the stomach; and anæmic persons also suffer from that disease.

Chronic catarrh of the stomach often follows an acute attack. Acute catarrh may be accompanied by slight symptoms, no fever, simply sickness and dull pain, or it may be accompanied by headache, delirium, painful vomiting, and severe fever. Usually it passes off in one to two weeks.

The digestion is irregular in chronic catarrh. The stomach is swollen and sensitive to the touch. After meals a sensation of fulness, griping or lancinating pain over the epigastrium follows, extending towards the sides and the back. The appetite is occasionally ravenous, and vomiting and sickness prevail.

Constipation and diarrhoea alternate. Brain activity suffers, and hypochondria is often produced in the course of this disease.

The disease is not dangerous to life, but is often obstinate and only slightly amenable to treatment. If neglected, ulceration and cancer may be set up.

A suitable treatment, rigid diet, regular life, daily massage, greater activity of the muscles of the abdomen, the stomach, and the intestines will certainly bring about amelioration, and sometimes the cure of this disease.

(B) Constipation.

Constipation must be considered as a special disease, for it is accompanied by perversion of various functions. The time at which the stools follow each other normally is different. Some people are moved two or three times in twenty-four hours, others only every second or third day. An opening of the bowels every twenty-four hours is to be considered as most natural. Persons whose occupation is sedentary, however, do not follow this rule, especially the aged, when the strength and activity of the organs become weakened.

The following are other causes:—

Partaking of indigestible food, red wine, astringent medicines, prolonged use of purgatives, poverty of blood, pelvic tumours, piles.

The consequent disturbances connected with it are flatulency, perversion of the blood circulation, palpitation of the heart, giddiness, disturbed sleep, decreased appetite, and disturbed micturition.

From this it is evident how many various morbid conditions we have to consider and what favourable results may be produced by a consecutive movement cure and massage.

If firm and hard scybalatous masses have collected through prolonged weakness of the bowels, an effective massage of the belly will cause the masses to break up and enable them to be moved forward along the intestine, until they reach the rectum and from thence may be removed by softening enemata.

(C) *Hæmorrhoids.*

Diseases of the liver and heart, tumours, sedentary life, produce stoppage of the circulation in the lower bowel. This causes great venous congestion, and is often accompanied by catarrh of the rectal mucous membranes. This condition is known as hæmorrhoids. They are recognised by the knobby swelling in the anus and by the occasional bleeding and mucous secretion from the rectum. Further, there is troublesome itching and the desire for frequent defæcation. Sometimes the swellings are protruded during defæcation and are gripped by the sphincter muscle. This causes inflammation and burning pains. When the swellings suppurate, fistula and ulceration of the rectum are formed.

When bleeding supervenes in persons full of blood, it often relieves the piles, if the blood is congested in other organs; but should the bleeding become too abundant, and if it be frequently repeated, other diseases may arise, such as heart disease, dropsy, &c. Should the discharge of mucus increase largely, or should a sudden arrest of the

habitual discharge of blood and mucus occur, bad consequences may result.

In the natural treatment of this troublesome condition, cold compress to the abdominal region and the back, the sitz-baths, massage of the abdomen and movements tending to cause absorption have important effects. The movements are to be carefully practised, because vibrations may cause the recurrence of severe hæmorrhages.

(D) Disturbance of the Hepatic Circulation.

In hepatic congestion we must differentiate between that form caused by increased supply of blood to the organ and that caused by difficulty in sending it forward to the heart, *i.e.*, by some disturbance of circulation. The causes of the former may be external influences, but may also be brought about by a too nitrogenous dietary, by want of exercise, by alcoholic beverages, by the stoppage of the blood flow, as in arrest of menstruation, or of the habitual hæmorrhoidal hæmorrhages, or it may be that the congestion is produced through a change of climate.

The causes of the second form of hepatic congestion, caused by stoppage of the circulation, are constipation, heart and lung disease, which frequently have circulatory difficulties as a result.

Hepatic congestion may be recognised by a dull pain in the liver region, with a feeling of distension of the liver, associated with pain or with the vomiting of greenish masses and slight fever. An important symptom is the ready filling and contraction of the liver.

The treatment of congestion of the liver naturally depends upon the origin of the disease, which has to be removed if possible. Energetic active movement of the whole body take here the foremost part, as it is evident that the blood circulation must be regulated and improved. The perverted equilibrium must be restored, so as thus to improve the tone and activity of one or of all the organs.

Different exercises of the trunk are to be employed, movements of the legs and such movements of the arms as

will produce a blood circulation through the muscular tissue.

Mechanical influences which are directed towards the abdomen, hasten the cure by exciting metabolism. Stroking and frictions of the liver region, tapotement of the back and of the limbs conduct the blood to the surface, and have, alternately with moist compresses and rubbings of the abdominal region, brought about wonderful cures.

(E) Gallstones.

As in the causation of gallstones stoppage of the bile-flow and damming back of the bile into the gall-bladder plays an important part, we are justified in recommending bodily exercise as the simplest and surest means for curing this trouble.

As a rule this is a disease of advanced age, and is more common among females. To explain this fact, sedentary life in advanced age must be considered, and the perversion of the biliary secretion in consequence of tight-lacing.

Besides this, obesity and gout create a tendency to the formation of gallstones.

6TH SECTION.—FEMALE DISEASES.

Through the circulation blood is supplied to various parts of the body to form different secretions. Movements of the body increase the circulation and pressure in the arterioles, and increased exudation of the blood into the lymph spaces is brought about. The blood-pressure is thus reduced in the venules; therefore an osmotic exchange between the blood and the food supply is produced, so that the food material from the blood enters the lymph spaces, and the waste matter passes into the blood. Acceleration of the blood-flow in the arteries and veins increases the absorption and excretion of waste material. At the same time a readier absorption of food results in consequence of the increased blood-flow. Thus the human organism gains in health and strength in consequence of a stimulated metabolism.

Exercises assist the economy of the organism and benefits especially the excretions.

Active movements are used as well as massage in all the troubles and disturbances of the abdominal organs.

(A) *Menstruation.*

In certain diseases, as anæmia and consumption, menstruation may stop, and upon such circumstances the treatment depends, for it is of great importance to seek for the cause of the arrest of this function. When symptoms of the setting in of menstruation are present, but a sufficient quantity is not discharged, movements have especially proved successful. The blood-flow into the pelvic organs is thereby increased, and the hæmorrhage is produced by mechanical vibrations.

Painful menstruation may be caused by the change of form of the respective organs, but it may also depend on the irritability of the uterus, or upon an increased flow of blood into the pelvic organs.

If painful menstruation depends upon nervous irritability or irritation, a pain in the dorsal region, in the abdomen and the thighs, precedes the onset of the menstruation, and continues often for several days.

If painful menstruation is connected with hyperæmia of the pelvic organs, palpitation of the heart, headache and fever precede menstruation and continue for the first few days. Such symptoms are not only found in full-blooded people, but also in those who suffer from poverty of blood and general debility.

The pelvic organs are influenced by carefully-regulated passive movements, which diminish the increased irritability of the pelvic nerves.

A too copious blood-flow from the uterus is met with in diseases of that organ ; also in diseases of the heart and lungs, which have a perverting influence upon the circulation of blood in the uterus. The causes of the flow may also arise from irritability of the uterus, called forth by the increased blood supply. The symptoms of this flow are

mostly intense. The blood is liquid partly and partly clotted.

If heart disease or lung disease be the cause of the increased blood-flow, the treatment must depend upon this fact. If disease of the uterus be the cause, active movements are to be carried out in the intervals. In both cases proper rest is to be used during the menstrual period.

(B) Chronic Catarrh of the Uterus.

The term white flow (leucorrhœa) is used for a secretion proceeding from the female sexual organs. It may be more or less mucous, or clear or purulent and mixed with blood. The disease is often present in anæmia, scrofula, &c. This catarrh arises from congestion of the uterine vessels. It may be due to circulatory troubles, as in heart and lung diseases, in tumours of the pelvis, and in severe constipation. It may also be due to irritation of the uterus, which causes an increase of the blood supply.

Movements like tapotement, pressure, flexion, and extension, which relieve the circulation in the pelvic organs, have proved of great benefit.

7TH SECTION.

DISEASES OF THE ORGANS OF LOCOMOTION.

I have previously mentioned that those diseases in particular arising from perversion of certain conditions of locomotion of our body may be improved by movement and massage.

An inactive muscle degenerates. The muscles are developed by bodily exercise. They become more powerful. At the same time the skeleton is developed. Prolonged movement causes fatigue. The fatigue, however, is diminished or disappears as a result of the use of passive movements, which proves that the waste products, which are accumulated in the muscles, are more readily removed by the help of these movements. The increase of appetite which is produced by these movements points to the fact that an increased metabolism has taken place in the

muscles. It is a direct proof of the metabolism which takes place in the muscles that the muscular work carries with it increased heat production and an increase of the products of oxidation.*

If, therefore, bodily exercise can account for increased metabolism and strength of muscle, suitable special movements must also exert an influence upon certain groups of muscles, and produce a more healthy condition of those groups where weakness has formerly existed.

When, in consequence of unusual external pressure, a vessel gives way, or stretching or tearing of muscles takes place, inflammation and swellings are produced in that region. Massage is especially suitable to terminate such inflammation, and to cause absorption of the effused blood and serum. Pain, which accompanies such inflammation, is often in this way improved. For instance, if a part of the thigh is inflamed and swollen on account of a contusion, massage might be profitably employed in the following manner:—A further effusion into the tissue would be arrested by pressure and kneading of the part affected, and the blood which is already effused would be uniformly distributed and more quickly absorbed. The removal from the affected part of the effused fluids causes a decrease of blood-pressure on the surrounding sensory nerves, and thereby relieves pain.

In very excessive exertions, as in pulling, lifting, pushing, or in severe convulsions, a sudden rupture of muscular fibre in the muscles may occur.

Long muscles, as in the calf and in the abdominal walls, are exposed to such accidents. Involuntary muscles of the important internal organs, such as the cardiac muscles and muscles of the stomach, may also be ruptured.

We recognise the beginning of this in the cessation of the function of the respective muscle and the simultaneous pain.

Where rupture has taken place, a space is observable, which is enlarged when the muscle is put into activity.

After some time a swelling is perceivable, and with it the inflammation is to be recognised by the external colouration.

And if the rupture of a superficial muscle is not dangerous in itself, it requires considerable care to bring about its restoration. The prompt employment of a moist compress frequently renewed at first and subsequently at prolonged intervals, combined with gentle effleurage, are remedies which accomplish the most approved results.

A disease which often occurs, and in which this treatment has a remarkable success, is

(A) *Muscular Rheumatism.*

This is a disease with a dull aching or irritating pain, involving one or more muscles, which is exacerbated by the movement of the part affected, and may even lead to complete loss of muscular power. The skin over the affected muscles is not changed and very little swelling can be noticed. The pain is enhanced by external pressure, though occasionally diminished. Sometimes there are some accessory conditions to be met with, such as coldness and stiffness of the muscles. Rheumatism may further be localised to a particular part or it may be metastatic. It may be acute or even, in severe cases, it may be accompanied by fever. Or it may be chronic, with intervals of intermission.

Anatomical investigations have shown various results, as for instance, the presence of blood accumulation, exudations, etc. In most cases, the muscular tissue or the muscular sheath seems to be the seat of the disease. In long cases it may even produce atrophy of the muscles.

Careful massage, in connection with corresponding active, passive, and resistance movements, may bring about a cure even in the severest cases. The acute form of the disease may be removed after a short course of treatment, the chronic form only after a prolonged care.

(B) *Lumbago.*

The most frequent form of muscular rheumatism is "Myalgia lumbalis." The seat of the disease is the loins, to a larger or smaller extent, and is felt to the left or right, sometimes on both sides of the vertebral column. The place in which the patient points out the principal pain,

which is deep-seated, may frequently correspond to the transverse processes of the lower lumbar vertebra.

But real lumbarrheumatism may also affect other muscles. That which is most often affected is the "Sacro-lumbalis" or lumbo sacral muscles. The extent of the pain, the variety of functional disturbance, and the position of the patient indicate the locality of the trouble. It is, however, very difficult from this to give an exact diagnosis, which can only be formed as the result of much experience and practice in massage.

The cause of this trouble may be (1) rheumatic or (2) traumatic; and the symptoms in both are (a) stooping posture, (b) the patient is careful as to how he sits or lies down, how he gets up from his chair or from his bed. He is careful in turning and bends his body in a stiff attitude.

Among the remedies recommended for lumbago, movements hold the first place. We begin by kneading the naked back, if possible twice daily, and this is continued until the sensation of pressure is no longer felt, after that we employ the movements, vibrations, and hackings.

It is evident that all cases of lumbago cannot be cured, but most of the patients improve, and many of them are entirely restored to health.

A peculiar disease, and one which can only be treated by movements, is:—

(C) Progressive Muscular Atrophy.

This disease generally occurs in convalescence after severe diseases, or after prolonged and excessive muscular work. In the beginning of this disease, we notice great fatigue in individual muscular groups. This is followed by a feeling of formication, and then the muscles begin to atrophy.

Over and above this, pains of some peculiar form are noticed, sudden application of cold causes muscular contractions. If the disease extends to the facial and respiratory muscles, it may become dangerous to life. The destruction of the muscular substance is based upon

metabolism, upon breaking up of the fine muscular fibres, and the consequent fatty degeneration. The muscle loses its normal colour and turns yellowish-grey and soft.

The patients affected by this disease have a tendency to think light of the disease and do not take the proper measures at first. It is necessary to carry out active, duplicated and passive movements, kneadings and centripetal frictions, with the utmost perseverance. We should not shrink from the cure because of its duration. It may have to be continued for months before health is restored.

(D) Ganglion.

This is a strange formation often met with, though not dangerous and quite amenable to treatment by movements and massage. It consists of a somewhat elastic swelling of the size of a walnut, mostly round and hard, which occurs in the neighbourhood of joints and tendon sheath, and is mostly seen on the hands. It is due to expansion or rupture of the tendon sheath, by new formation or by the formation of the mucous sac. The swelling is painless, and only when it has increased in size, and movement is impaired, does it get inflamed in consequence of external pressure, and it then causes severe pain.

Gradual and careful pressure, rubbings, and centripetal effleurage cause distribution and absorption, and at last the swelling disappears.

Movements and massage influence also very favourably the diseases of the joints.

Success is all the sooner effected the earlier the treatment is commenced.

(E) Sprains and Dislocation

Are complete or partial displacements of a bone from its natural socket in consequence of external violence or manipulation. Morbid processes can also bring about the dislocation of the joint.

In cases of dislocation a violent extension of the ligaments is produced. The result is swelling, stasis, and

inflammation. Sometimes an extensive rupture of the ligament happens, with effusion of serum, which produces stiffness or swelling of the joint. To cure this, the inflammation must be quickly removed by massage so that no suppuration shall take place.

We begin carefully with centripetal friction under slight pressure, because the part is very painful, and, when the swelling and pains are somewhat relieved, the manipulations can be increased in strength. The swelling must be dispersed carefully, the exudation must be conducted into the circulation again.

Passive and active movements, as far as possible without exertion, and cooling compresses may be used with advantage.

It is in itself evident that a complete restoration of the dislocated parts into their normal position must precede massage and movements. In cases of fever being present, the treatment has to begin after the fever has stopped.

Another important group of diseases for our treatment is :—

THE INFLAMMATION OF THE JOINTS.

We mention in particular inflammation of the hip-joint, knee-joint, and ankle joint.

(F) Inflammation of the Hip-joint.

This is a disease which occurs mostly in the young. It can occur suddenly without any symptoms in children who appear to be healthy, and without any apparent cause. Generally this disease begins in the head of the femur, as the so-called inflammation of the bone marrow.

Sometimes it begins in the "acetabulum" and the joint capsule. If the disease is chronic, very often no pains are felt in the joint, but only a dragging of the affected limb. The tendency of the child to move it as little as possible when standing demonstrates to the parents of the child the existence of the disease.

If the inflammation affects the synovial membrane of the joint, a decided pain is felt in the knee. Every move-

ment of the joint produces this pain. In consequence of the spread of the inflammation, more effusion takes place and the leg is lengthened. The pain becomes more frequent and prevents the patient from using the limb. The inflammatory process may proceed so far in suppuration as to endanger life. In the course of the treatment ankylosis may occur, and consequent immobility of the limb and deformity.

In the treatment of this disease, we have to note specially that the affected joint takes up a position free from pain when at rest. Then we begin massage of the affected leg or hip-joint, by pressing, kneading, stroking the part very carefully twice daily, to be followed first by passive and at last by active movements.

(G) *Inflammation of the Knee-joint.*

This may be *traumatic*—that is, caused by external violence, as a blow, a fall &c.—or it may be *chronic*, and produced by a morbid condition of the structures.

Traumatic inflammation can only fall under this treatment seldom and with the greatest precaution, because any suppuration prohibits it, and the removal of morbid products may endanger the whole body.

Chronic inflammation of the knee-joint, however, which is often associated with infection of the cartilages and bones, has been treated with the greatest success. The patient feels for a long time pains of various intensity in the knee, which is somewhat stiff. In the further course a soft swelling is noticed. The pain becomes worse, the knee more flexed, the skin reddens at a point, until at length the pus points towards the outside. This produces a temporary relief. In the worse cases, the formation of pus extends more widely, in the best cases it gradually dries up. The pains lessen, the general state of health is improved. The joint, however, remains more or less stiff on account of the partial destruction of the cartilage and the ends of the bones. The normal muscular activity is arrested and a gradual atrophy sets in. .

Massage, in form of frictions and strokings, effects the destruction of inflammatory products and their absorption, and by kneadings of the surrounding atrophied muscles, by great perseverance and patience, cure is often effected. One should, however, not be disheartened at first by the severe pains, and, in the treatment of joint disease, not forget that the movements, active and passive, help the treatment, and that prolonged rest is harmful rather than useful.

(H) Inflammation of the Ankle-joint.

This may be traumatic or rheumatic, or may arise from a general morbid condition of the body.

We also use massage in the beginning of the disease, if no pus or fever is present, with the same favourable results as in the above-mentioned case. But special attention must be paid to active and passive movements of the joint.

Another kind of joint disease is :

(I) Rheumatic Arthritis.

Two forms are known, the *acute* and the *chronic*. The *acute* is a severe complaint, most painful and associated with fever, a violent condition during the whole period of the disease, for which our treatment is naturally not fit, because it only distributes the morbid products into the lymphatics and thus intensifies the mischief.

In the *chronic* form, however, the only remedy, when remedy is possible, has been shown to be this treatment.

The symptoms are insignificant to begin with, slight impairment of movement, slight pains, determined by the weather, are the only symptoms of a trouble which may last for years in the same condition, without any swelling of the joints being manifest. But mostly effusion into a joint arises, fluid collecting, whereby the synovial membrane and the joint capsules become thickened. Pain is always present, and only alters with the temperature and moisture of the atmosphere.

The mobility of the joints is not normal, and a degree of stiffness follows a temporary rest.

Joint deformity is seen best on the hands.

A timely treatment has, in some of the severest cases, brought about improvement and cure, naturally only before hydrarthrus (chronic synovitis) has begun.

Stiffness may also have its origin in other troubles, and the treatment has to be more or less modified by this. The usual forms of treatment are, strokings, tapotement, frictions and passive movements, whilst the muscles of the affected limb must be kneaded, and must also be sometimes "hacked." That sufficient active movement can accomplish a cure seems to be evident.

In order to hasten the union of simple fracture of bones, we endeavour by strokings to remove congestion over the seat of fracture and to return the effused blood into the bloodvessels; we thereby diminish swelling and possibly attain an exact union of the fracture. The strokings must be carefully performed, and may be begun early after the accident.

That active, duplicated, and passive movements may ultimately prove helpful is shown by the nature of the fracture.

8TH SECTION.—DEFORMITIES.

I have to describe a group of troubles of frequent occurrence, namely, defective attitude and curvature of the spine, which is so often found among the young, nowadays, and which is too seldom attended to. Each curvature, even of a slight degree, requires great attention whenever it has a tendency to increase.

Many parents continue to hope that slight degrees of scoliosis will recover of themselves. Unfortunately, this is deceptive, and when we at last decide seriously to combat the trouble it is often too late. This sad experience is only too common, and we can, therefore, not utter enough warning about the neglect of curvature or defective attitude.

The vertebral column has posteriorly certain normal physiological curves in the chest and the sacral region (kyphosis), anterior curvature in the cervical and in the lumbar region (lordosis), and lateral curvature of the spine (skoliosis). These curvatures may be exaggerated and become pathological.

(A) *Kyphosis*.

The forms in which kyphosis is mostly observed are:—

(1) *Rachitic Kyphosis* (*Rickets*).—When we place a rickety child of two or three years, at which age the normal curvatures should be moderately developed, into a sitting position and examine the back, it is seen to form simply a uniform curve, having a posterior convexity. If the child is placed in a horizontal lying position, this curve disappears again, so that the curvature is not fixed.

Great relaxation of ligaments and of muscles, as well as the softness of the bones, which in a great degree characterise rickets, affords ample explanation for this. After the decrease of resistance, the weight of the spine is bent convexly to the posterior aspect.

If, after the disappearance of rickets, the action of the muscles and the strength of the bone and ligaments again increase, the posterior curvature disappears, and the back returns to its normal curves.

Rickety curvature seldom shows any lasting deformity unless skoliosis is present, in which case severe deformities occur.

In the treatment of rachitic kyphosis, it is requisite to bring the children as much as possible into a horizontal lying position, and to use light movements and massage.

(2) *Kyphosis of Children* is called "humpty-back," and is most common in girls, but it also occurs in boys. It is due to relaxation of ligaments and muscles, which, especially when the bones are growing and developing quickly, causes the curvature of the back under the influence of the weight. Should the children remain in a flexed position during many hours of the day, as in reading and writing, the curvature of the back is strikingly

increased. We often see, especially in myopics, kyphosis and projection of the head. It is more a result of attitude than a disease. Nevertheless, it is advisable to have it stopped or treated in time, because it may increase to a troublesome extent.

The treatment consists in attending to the general health, and especially to the muscles of the back; good nourishment, plenty of fresh air, lying on a firm mattress, strengthening of the muscles of the back by suitable movements are especially to be taken into consideration.

The third form of kyphosis is the so-called

(3) *Labour Kyphosis*.—Every occupation which demands a prolonged flexed position of the body, especially with increased weight, tends in the course of years to kyphosis. Bones and ligaments alter under the influence of the weight, and the muscles lose the power to combat the kyphosis successfully. We cannot speak of any treatment of this deformity.

The last form includes :—

(4) *Senile Curvature*.—The muscles are useless in advanced age, the bone substance softens, the fibrous tissues give way, and the spinal column shrinks by reason of the weight of the body with a posterior convexity, with the greatest curvature between the scapula. This form is rarely suitable for our treatment.

(B) *Lordosis*

Is almost always found in those parts of the vertebral column which show a moderate degree of anterior curvature, namely, in the cervical and in the lumbar regions. Anterior curvature of the dorsal part rarely occurs, and then is only temporary.

Lordosis in the loins is frequent, and is in most of the cases a consequence of increased rotation of the pelvis. Paralysis and atrophy of the muscles of the trunk often lead to anterior curvature in the lumbar region.

If the patient has lost the function of the muscles of the back he can no longer assume the erect position; instinctively he finds out that he can only stand erect when the upper part of the trunk is leaning backwards, and he gets

so accustomed to it that it becomes his habitual position. Only prolonged movements of the abdominal muscles can influence lordosis.

(C) *Skoliosis.*

Skoliosis is more frequent than the other two forms, and the mechanical conditions are more complicated. Every permanent lateral curvature of the spinal column is a skoliosis. It is due either to a primary affection of the muscles, or it has its origin in the skeletal system. A disease of the muscles or of the osseous structures occurs as a secondary affection when the primary affection is not cured.

It is, in its onset, an insidious disease, the first symptoms being difficult to discover. It is, however, of the greatest importance to detect it, as treatment promises a good result. The slightest asymmetrical position of the shoulder-blades or the hips must always warn us, and lead us to careful examination to see whether the curvature is not due to some abnormal deviation of the thoracic or lumbar vertebræ.

There is naturally, the possibility that the shoulder-blades, as well as the hips, take up an abnormal position from mechanical or pathological causes, which have to be ascertained by thorough examination. By inspection and by touch, by mensuration of the corresponding parts of both sides of the trunk, pelvis, and limbs, a skoliosis may be detected from the onset. Skoliosis has generally a definite course, and pathologically we may correctly distinguish three stages of development.

As soon as a curvature in any section of the spine, whether in the chest or lumbar region, is diagnosed, skoliosis is then in the first stage, and is characterised by the fact that the patient is enabled to keep the vertebral column erect through its own voluntary muscles, and that in the horizontal position of the body the curvature is equalised. The patient, however, can only retain this position for a short time, and resumes shortly the position of curvature. Sooner or later compensatory curves follow the primary curve. With the development of such a

curve skoliosis enters upon the second stage. The curves form an S. Very often a further compensatory curvature in the throat and sacral region sets in and causes the vertebral column to assume a wavy outline, generally with the deepest and the longest curve in the thoracic region. Rotation of the spinal column upon its long axis, with the vertebral bodies towards the convexity, and with the spinous processes towards the concavity, is peculiar to the second stage. With a permanent lateral spinal curvature, and by the rotation of the same upon its axis, inter-vertebral discs and the vertebral plates are altered; also the ribs, clavicle, and scapula in their relative positions. This forms the third stage of skoliosis.

But deformity is further developed if the condition is not arrested. The time which deformity takes to develop evidently varies, and depends partly upon external circumstances, partly upon the structure of the cartilages and the bony substance. It is evident that the degree of deformity in other parts naturally depends upon the extent of the vertebral curvature.

As regards the influence of skoliosis upon the general health, local affections do not complicate it in the first stage. It even occurs that in advanced skoliosis the health is good. The supposition that skoliosis can be spontaneously cured at first is shown to be incorrect. Under favourable conditions it happens that skoliosis may be stopped in any of its stages, and it may go no further; but it is an uncertain hope, and it would be an unwarrantable neglect not to procure immediate assistance whenever it is observed. Skoliosis is accompanied by a constant set of symptoms. In most of the cases the deformity is in the S form, with the superior convexity to the right, with the inferior towards the left side. Other forms are to be held as exceptions.

As causes of a deviation of the vertebral column, the results of different illnesses, such as rickets, osteomalacia, injury to the vertebræ, &c., have to be remembered, but the special cause is a slight and irregular activity of the muscles of the back. By this the position of the vertebræ

is greatly influenced. Curvatures are produced as soon as the muscles are not sufficiently exercised or are exercised unequally, particularly when growth is proceeding and the muscles are relatively weak.

The female sex, as a result of its weaker constitution, has a greater tendency to skoliosis than the male sex. During the early period of life, illnesses in those in whom action and nourishment of the muscles has been defective often leave behind them a deviation of the spine.

Further causes of skoliosis can be produced by attitude of the body, by sitting in the flexed condition, by the habit of standing on one leg, by exaggerated use of the right arm. The hereditary tendency is scarcely to be taken into account, but cases of congenital skoliosis have occurred, which possess a great scientific interest, but are of no practical value because they do not form suitable cases for treatment.

With regard to the treatment, it is necessary to understand, above all, the pathological nature of the disease. In treating simple or one-sided skoliosis, it is essential to restore antagonism or to equilibrate the muscles on both sides of the body. The muscles of the convex side are weakened or altered, and they must be brought back or restored to their normal condition. The method of the movement treatment is simple and easy. The muscles of the convex side have to be exercised, stimulated, and strengthened.

If the convexity, as is usually the case, is directed towards the left side, flexion towards the left side should be carried out, with a support applied to the highest point of the convexity. The muscles of the left side are therefore active, whilst those of the right side become simply the object of passive extension. Through an isolated activity of the muscles of the convex side of the back, the spine is not only extended, but, in cases of no real deformity or ankylosis of the vertebræ, the bending of the spine may attain so remarkable an influence that it produces, during the highest point of the movement, a convexity in an opposite direction. In cases where deformity and dimi-

nished mobility of vertebræ occurs, a greater tension is attained.

Bending of the body to the left side with support on the left side, lying on the right side, right extension of the arm upwards and lifting of the left hip in lying position are the most essential movements in simple skoliosis, which are to be several times repeated.

The spine is by these means kept uniformly extended and the power which is required is thus developed and increased.

Between the movements the patients must rest sufficiently in a horizontal position. If the movements are carefully and correctly carried out, the influence is remarkable.

It is evident that we have to take other diseases into consideration from which these patients may suffer.

In the treatment of double skoliosis, we have not only to employ extension of the spine in a right or left direction; the opposite curves render movements necessary which have an extending influence upon both simultaneously, as, for instance, raising of the back with double lateral support; leaning against a bar as support and upward stretching of the arm; leaning forwards with extension of the arms upwards; lying with left arm stretched; raising of the right hip; bending of the neck in hanging posture and between each movement carrying arm backwards while in standing position.

These are some of the movements which form the basis of our treatment. No special value is to be attached to the number of the various movements, but on the correct manner and suitability of the movements. The correct manner consists in developing and increasing the powers which keep the spine straight. The proper suitability consists in carrying out the movements with sufficient power and in a decided and adequate manner.

To conclude, I have to add a few words in reply to the question whether the use of mechanical external means of treating skoliosis is really necessary, and whether it is of great importance from a practical and theoretical standpoint.

In cases where treatment by movements can restore the patient completely, mechanical remedies are naturally superfluous. This happens where the intervertebral discs and the vertebral bodies are in no way altered by disease. Here the treatment by movements can be used as a sure remedy.

If skoliosis is in the second or third stage, and if more pronounced deformities of the discs and bodies are present, then the treatment by movements cannot remove the deformities to any greater degree than any other remedy. A suitable movement treatment can, however, better than any other treatment, improve the condition. The latter consists in this, that although the spine is flexed and fixed, and is so accustomed to that position that the parts have adjusted themselves to each other, experience teaches that individuals, in spite of a remaining curvature, have attained so powerful an attitude by the movement treatment that they do not feel the slightest pain or weakness in the back.

It would not only be unnecessary here, but harmful, to employ supporting apparatus. Even the finest and best-fitting apparatus cannot be well worn in many cases.

It is an inconvenient necessity to which some individuals become accustomed, but which, nevertheless, may be harmful.

Skoliotic individuals who have gained the power to maintain the erect posture and do not feel any pain or weakness in so doing, but can carry out suitable movements, have no necessity for any such mechanical remedies, which may even prove harmful to them, from the fact that the powers acting to keep the spine straight are weakened by this unaccustomed support. Therefore the use of these external remedies can only be used for cases in which for any reason a treatment by movements cannot be obtained, or cannot be carried out with sufficient energy or for a sufficient space of time.

(D) Inflammation of the Spine.

In this deformity the vertebræ form an angle. As a result of an inflammatory process a single vertebra or

several may suffer, a change of form causing the back to give way.

The deformity most frequently occurs in the dorsal vertebræ; to a less extent in the cervical region.

A tuberculous diathesis is in many cases the cause of this perverting process. Further causes are inflammation of the vertebræ or of the intervertebral discs. Insufficient or unsuitable nourishment, dark, narrow, and damp rooms conduce to the development of this condition.

In considering the treatment of this disease by movements, it is understood that nothing can be done for the deformity. We must also have assured ourselves that the inflammatory process has entirely ceased, and the treatment must not be commenced too early after the cessation of the real disease.

We begin with movements of the arms and legs, which are, later on, followed by movements of the trunk, which improve respiration and circulation, both being more or less defective in this deformity. The movement treatment aims thus at improving the general condition of health.

(E) Concluding remarks on other deformities.

I must still mention that slight cases of other deformities, like turning in of the toes, bandy-legs and knock-knee, club-foot, flat-foot, wry-neck, require orthopædic treatment. Rickety deformities, anomalies of positions due to rheumatic arthritis and paralytic deformities require special consideration.

Although a great field is opened to osteotomy and orthopædic surgery, we must never forget that such operative manipulations often result in producing an imperfect cure.

Operation is only, therefore, urged for cases in which a self-extension can no longer be expected.

It is evident, that hereditary deformities are not suitable for cure. There are no remedies to replace the defects of nature.

We are sometimes able to fix deformities of the joints in

a suitable position by bandages or splints, and the patient, as long as he wears this apparatus, can perform certain movements; but as soon as the supports are removed the deformity is again produced, for defects of the primary formation can never be replaced.

Medical science has no means to cure these deformities.

CHAPTER IX.

SOME CASES WHICH HAVE BEEN
SUCCESSFULLY TREATED.

IT would be impossible to give a report on all the cases which I have treated, but it may interest my readers to peruse some special cases which have been treated with most favourable results.

Miss B.—Suffered from anæmia, headache, giddiness, lassitude, palpitation, cold feet and hands. Was treated for three months ; improved after a short time and left cured.

Mrs. B.—Had been confined to her room for years on account of gouty swellings in the fingers, hands, and shoulder-joints, as well as in the knees and ankles. General condition perverted, and suffering from mental depression. Her physician advised her to come under my care for three months, and I obtained an excellent result. The vibrations, applied to painful places, considerably relieved her.

Mrs. H.—Obese, with weak heart, decreased in six weeks 11 lbs., with a regulated diet. She was freed from shortness of breath, learned to walk, and could climb stairs, which had become difficult to her. She was grateful for the relief given.

Mrs. St.—Was sent to me from Liverpool, fifty-two years old ; she remained for one month only in my Institute, but came under my treatment twice daily. She was pleased with the beneficial results. We had to combat corpulency, weakness of heart, shortness of breath, difficulty of movement, stiff knees, and constipation. After a month the body weight was decreased by 7 lbs., the

general condition was excellent, and the patient could walk and climb without difficulty.

Mrs. S.—Had been suffering for a year with neuralgia in the arm and had been formerly suffering from other neuralgias. She was cured after two months' treatment by movements and massage. The irritability was so great that she was afraid to button her gloves, since this action increased the pain. Vibrations and movements of the arm were especially beneficial. When an attack threatened her a year afterwards, a brief treatment prevented it.

Mrs. L.—Tried movements on account of shifting nervous pains and insomnia. The treatment was, after three months, successful.

Mrs. C., age 55.—Suffering for three months from left sciatica, with impairment of mobility and nocturnal pains was, after a treatment of six weeks, so far restored that she could walk and stand upright and could dress without difficulty.

Mrs. W.—Suffering for a year from left sciatica, which resisted electric treatment, hot bath, and salicylates, began the movements with great fear, and said at first that she could not bear them. She, however, improved so much that she gradually began to like the treatment, and at last executed the movements so patiently that it was difficult to avoid overdoing them. After two months she was free from sciatica.

Miss M.—Suffering from hysteria in a high degree, increased 23 lbs. during a course of twelve weeks' fattening treatment; but she did not get stronger or more active. This could only be obtained by a prolonged and continuous movement treatment. She was simultaneously freed from neuralgic pains in the back, palpitation, constipation, coldness of the hands and feet. As, however, the fat diminished a little, the body recovered its normal form, and the nutrition was improved.

Miss L., age 20.—Suffering from hereditary nervousness, had been in an asylum for the treatment of nervous diseases on account of hysteria, was successfully treated after a course of six months.

Mrs. R.—Hysterical, with a tendency to fainting and vertigo, often shivering from cold and suffering from constipation and insomnia, improved in the first months as regards the regularity of the bowels, and could sleep. She felt much better after six weeks, and after six months' treatment was gratified by the success. She has since then continued the treatment with some interruptions, and warmly upholds our methods of treatment.

Miss K.—Suffered from paralytic form of writer's cramp, trembling and weakness in the hands and crampy contraction of the fingers after writing for ten minutes. After a treatment of two months she had so far recovered that she could write for an hour with facility. In two more months her general state of health was excellent, and the writing trouble had ceased completely.

Miss P.—Very feeble and nervous; was suffering from the same trouble caused by piano-playing. The fourth left finger often became useless. After three months' treatment this weakness was removed.

Anna P., age 14.—Had originally enlargement of the heart towards the right side, as a consequence of rheumatic arthritis, with a systolic murmur, which disappeared in the course of a treatment with movements for six months. The other troubles, palpitation, oppression, and cold feet also disappeared.

Miss R., age 17.—With a considerably dilated hypertrophic heart, suffering from palpitation, nose bleeding, and headache, attended regularly for two months and showed remarkable improvement.

Mrs. M., age 35.—Suffering from irregularity of the heart's action, from dyspnoea and asthma for two years, with a systolic murmur at the apex of the heart; began with the Nauheim-Schott treatment. After a short time she declared that the treatment was specially beneficial, and that she enjoyed better sleep and had a better appetite. Gradually the attacks left off and the pulse became more quiet. After three months the patient was so far restored that she could undertake a voyage to the Continent.

Bertha N., age 12.—Who was supposed to suffer from

juvenile hypertrophy of the heart, consisting of a small dilation of the heart on both sides ; was completely freed, during a half-year's movement treatment, from palpitation, headache, and especially from nose-bleeding.

Mrs. B.—Suffered from palpitation of the heart and other symptoms, as a consequence of sitting with the thorax compressed and want of movement, whereby an excessive pressure upon the heart resulted. A series of Nauheim baths and prolonged movement treatment were beneficial to the patient. She was freed from palpitation and irritability of the heart, as well as from cold hands and feet.

Mrs. R.—With distinct hypertrophy of the heart, was suffering greatly since she became stouter. The blood flew to the head, the face was reddened ; she was suffering from shortness of breath, insomnia, cold extremities, constipation, flatulence, hæmorrhoids, and was not able to ascend stairs. She was much depressed, dissatisfied, and difficult to manage. In the beginning it was very inconvenient to her to submit to the baths and movement treatment, but I soon succeeded in proving to her that the manipulations had a beneficial influence upon her health. She continued the treatment for four months and improved so much that a journey to Switzerland caused her no trouble.

Mary S., age 15.—Suffered from the after effects of rheumatism of the joints, with implication of the heart ; from cardialgia, headache, cold feet, palpitation, and irregular heart-action. After six weeks we could see good results, and this was increased, after six months, so much that the treatment could be suspended for some time.

Mrs. S., age 55.—Was suffering from many and serious troubles, as a result of indolence and easy circumstances, and from debility of the heart. She suffered from palpitation of the heart, giddiness, insomnia, cold hands and feet, and was not able to ascend stairs or to walk far. A treatment of baths and movements, extending over four weeks, produced a good result. She could breathe more freely and sleep better. After another two months she was able to take long walks, was rejuvenated ; the depression noticed

at first was improved ; all her movements were easier, and the heart's action was better.

Mrs. C., weighing 14 stone.—Suffering from giddiness, palpitation, with pronounced weakness of the heart and stiff joints ; came under my treatment. After a few weeks she said that she should not have believed that improvement could have been so quickly brought about. She carried out the movements very exactly and enjoyed them ; brought friends with her, and scarcely knew herself after three months, since all her troubles had decreased ; she became supple, freer, and her weight was reduced to 12 stone 6 lbs. She left the Institute more than satisfied.

Mrs. G.—A corpulent woman, with symptoms of “fatty heart,” believed that she had got “blood cysts” on the heart. I succeeded in freeing her from this idea, from stiffness of the knees, dragging pains in the legs, constipation, flatulence, and headache, by regular daily movements for four months and a course of baths. She was enabled to walk again and to climb stairs. Unfortunately, her weight did not decrease quite so much as I wanted it. In many women the fat is not so easily removed as in others.

Mrs. B.—A young woman became fat during the last few years, and complained that “everything turned into flesh, nothing into muscles or bones.” She suffered from congestion in the head, heat and cold in the back, disturbed sleep, palpitation upon the slightest occasion. She was quite unable to ascend stairs ; had tried every possible treatment but without success. The result of our treatment with baths and movements, after four months, satisfied the patient well. Palpitation had decreased, sleep was peaceful, and all the other troubles disappeared gradually, and the general state of health improved.

Mrs. D.—Exceedingly fat, suffered from palpitation, especially after meals and after walking and ascending stairs. She felt that the heart's action sometimes stopped. Mrs. D. found great pleasure in the movements, and was the most frequent visitor to the Institute during the winter of 1894. She praised the success very much, and she was freed from palpitation, flatulence, and headache, and suffered less from cramps.

Miss L.—A fat young woman, with symptoms of fatty heart, found the movement treatment very beneficial improved and reduced her weight.

Mrs. S.—Suffered from a nervous heart, was stronger and fresher after four weeks, and said that the thorax expanded and the head became calmer. After three months' treatment the symptoms disappeared as well as an obstinate constipation.

Mrs. K., age 65.—Suffered from perversion of the circulation, shortness of breath, slowness of digestion, fulness after meals, nocturnal cramps in the limbs. She was very phlegmatic, and moved only when absolutely obliged. After a month her breathing was freer, she had fewer cramps, and her general condition was improved. After three months' treatment she could be considered as completely cured.

One of the most interesting observations made in our Institute in the treatment of bronchitis was with a Mrs. N., of New York; she suffered from chronic bronchitis with copious expectoration and dyspnœa. This lady visited our Institute on the recommendation of Dr. T——. She was so pleased by the movements and manipulations prescribed to her that she continued them for some time. She improved so rapidly that she postponed her intended journey to Paris and underwent our treatment for three months. The success was eminent.

In a series of cases of asthma a marked improvement was obtained by mechanical treatment. The dyspnœa disappeared more and more, the attacks were less frequent, and the patient mostly enjoyed undisturbed sleep.

Mrs. T.—Had often pleuritic pains in the left side and was not able to breathe deeply. The movements treatment at first pained her. After three months she improved considerably. There was less pain in the head, she slept well, coldness of hands and feet disappeared, and the bowels became regular. The pains in the side disappeared and breathing became more free. After four months she was satisfied with the result obtained and left the Institute.

Mrs. S.—Chronic catarrh of the intestines, constipation,

headache, cold hands and feet, bad metabolism. Improved remarkably, stools regular, head free from pain.

Miss R.—Nervous dyspepsia, cold feet, constipation. After two months' treatment, feeling of health returned, increased appetite, general lassitude, giddiness, and weakness in the knees removed, constipation less acute; decrease of weight $5\frac{1}{2}$ lbs.

Mrs. E.—Suffering from chronic catarrh of the intestines, constipation, congestion of the liver, was treated daily for four weeks with movements of the trunk and massage of the abdomen; appetite was increased, sleep was better and the bowels were emptied daily without medicine.

Mrs. P.—Suffering from chronic catarrh of the intestines, tendency to diarrhoea and hæmorrhoids, attained an improvement in three months.

Mrs. S.—Complained about irregular bowels, frequent calls of nature, flatulence, congestion in the head. After a treatment of eleven days a tapeworm was expelled, in consequence of kneadings of the abdomen and vibrations of the trunk. After this all symptoms were removed.

Mrs. J.—Suffering from the results of a tropical life, dyspepsia and constipation. Was wonderfully improved in general health and nutrition. She said she had never felt better than after a course of three months' movement treatment.

Mrs. N.—Constipation, obesity, congestion of the liver, flatulence, depression, debility. Obtained good results after three months; decrease of weight, 10 lbs.

Mrs. E., age 19.—Suffered from constipation from childhood. All remedies proved useless and she felt miserable. With the aid of drinking waters in the intervals, she succeeded in a perfect cure in a quarter of a year's treatment.

Mrs. L.—Said she was completely cured from piles after two months' treatment.

Mrs. L., age 64.—Had a hepatic congestion from tropical life. After a week's treatment felt some improvement. She continued the treatment for three months with splendid results.

Mrs. M.—Came to me on account of indigestion and congestion of the liver, which extended three fingers breadth below the margin of the ribs, and was accompanied by slight feverish symptoms. She was depressed, pale, had a defective appetite, and irregular bowels. She improved slowly, but the improvement was clearly manifested in the course of six months, during which the treatment was carried out with rare perseverance. The symptoms disappeared gradually, the liver area decreased, and the general state of health was satisfactory.

Miss A.—Anæmia, suffering from catarrh of both apices, menstruation, always slow and irregular, had for months been in abeyance. She improved after six weeks. Menstruation set in, appetite was increased, a series of symptoms like giddiness, noises in the ears, and lassitude disappeared.

Miss T.—Came to me with acute lumbago, and she left the Institute with a better attitude on the same day, after having been properly kneaded. After a week's treatment she was completely restored.

Mrs. L.—Had for years suffered from myalgia lumbalis. She had taken much medicine, frequented many watering-places without any lasting improvement. For three months she underwent the treatment, and as I met her by chance some time ago, I was glad to learn that, though the old trouble recurred sometimes, she has never had such severe attacks since the treatment, and could ride on horseback without difficulty.

Mrs. A.—Not able to flex the knee in consequence of rheumatism ; considerable atrophy of the right leg, can only move with crutches. After four months' treatment the knee became again flexible, the muscles increased in strength and size, and the patient can walk without support.

Erna T., aged 18.—Came under my treatment in consequence of atrophy of the muscles of both legs. She had worn for a long time supports of steel, but these had only weakened the power of movement. By gentle exercises and regular massage the patient could, after six months, go without support.

Mary L., age 14.—Had, as a sequela of diphtheria, a paralytic weakness, lasting four weeks, slight sensations of fatigue in both legs, inability to flex the knees, and dragging of feet along the ground. There was no muscular paralysis, but great muscular weakness. After a month's treatment the patient walked with a firm step.

Countess O.—Shoulder-joint almost immovable, could not raise the arm without pain in consequence of rheumatism. Cured after three weeks.

Mrs. R.—Had come under treatment by recommendation of her doctor after a paralytic attack. After a short time she felt the movements easier, and that she could carry them out better. After three months the mobility of the extremities was restored, and she left the Institute much satisfied.

Mrs. G.—Came under my treatment for six months without missing a day, and was very satisfied with the success of the treatment in reference to her general state of health, the improvement of her mental condition, and of constipation. She reported to me, after the treatment, that she was suffering from epilepsy, but that the nocturnal attacks, which occurred every four to six weeks, had become milder, and that even a longer interval was noticed between the attacks. She continued the treatment for another six months, and felt better when she left the Institute than she had done for many years.

Mrs. S., age 52.—Suffered for eight years from stiffness in the knees and obesity. She was treated for five months with movements and massage, and was so far strengthened that she could walk for two hours without fatigue.

Miss B.—Came under my treatment two months after an acute rheumatic arthritis, with enlarged hands and with a stiffness in all the joints. After three months I could observe a remarkable improvement. The movements in the hip and knee-joints were hardly impaired. The infiltrations of the hands had nearly disappeared. The patient could again play the piano.

Mrs. M.—Had an excellent result by movements. She had tried every possible means for the treatment of con-

traction in the left knee. She had been in Teplitz and had for a long time worn a stretching apparatus. When she came to me nearly all the joints, from the fingers to the toes, were more or less affected. She moved only with difficulty on crutches. After six weeks she could already walk for a short distance, with one crutch and one stick. After half a year she could dress herself, button her dress, &c. After a further three months' treatment the improvement was increased, and she could, with the help of a stick walk longer than an hour. When she left the Institute the joints were again flexible.

With regard to deformities, the various curvatures of the spine, internal rotation of the foot, club-foot, &c., I have treated a large number of cases, especially of the former, and very often with the happiest results. Yet it has often occurred to me in my practice, especially in London, that parents have only first noticed curvatures when they were already in an advanced stage, and that, on this account, the treatment would be difficult and tedious. Moreover, the children were often confined in a so-called "Spinal Jacket," supposed to correct the deformity, but which naturally has produced no beneficial effect, but has really caused harm. These appliances only act as encumbrances to the patients and prevent the free movement and expansion of the thorax, the faulty position of which they do nothing to remedy, but rather tend to accentuate. Correction of a deformity, sought by means of corsets, causes endless impairment of health, on account of the immobilisation of the back and chest, and takes off the bloom of life. Even if the movement cure should not always be successful in remedying the deformity, yet it benefits the patient, whose general well-being is considerably improved, and enables him to maintain, up to a certain pitch, the improved position of the strengthened musculature, and thus to counteract any tendency to further development of the deformity.

The victim of a spinal jacket, on the other hand, is, and must be, dependent on the apparatus, and becomes a stiff and weakly cripple.

I will now cite some of the cases of scoliosis treated by me, to encourage those of my female readers who are afflicted with deformities, whether they be only slight or distinctly marked.

Dagmar K., age 9.—Deviation at beginning of treatment, 17 mm. After six months' treatment, 7 mm. Improvement, 10 mm.

Elsie L.—Complete left scoliosis, 13 years old. Deviation, 19 mm. At the conclusion of seven months' treatment an improvement of 6 mm.

Elizabeth S., age 16.—Deviation, 12 mm. After five months' treatment only 7 mm.

Anna L.—Curvature in lumbar region, age 17. At commencement of treatment deviation 16 mm. After nine months, 7 mm.

Ellen L., age 13.—Deviation, 22 mm. Improvement of 12 mm, after four months. A case of complete right scoliosis.

Olga B.—Right lumbar curvature. Age 18, deviation 23 mm. After six months, 10 mm.

Amy A.—The same form of deformity. Age 15. Deviation, 21 mm. Improvement in 10 months only 2 mm.

From the foregoing we perceive that even in severe cases very good results may often be obtained. This method of cure only demands patience and perseverance to a greater extent than do most of the diseases treated by us.

Spinal curvatures cannot be forcibly made straight, but can only be compelled to grow straight. This growth takes time.

CONCLUSION.

THROUGH the foregoing remarks I hope to have further awakened the interest in Swedish treatment, which is now spreading far and wide. If I have succeeded in spreading the knowledge of this still too little cultivated therapeutic agent, and in obtaining due recognition for it, the chief aim of my work is attained.

At first sight it may appear as if I have not defined the boundaries of curative gymnastic treatment narrowly enough, but on closer study the reader will absolve me from the reproach of recommending the movement cure as a remedy against too many and too various diseases. Just as I have taken pains to show what is not to be expected from it, so it has seemed to me important, to demonstrate that, in the most various diseases, this remedy can indirectly claim a more or less considerable curative value. As a very simple, but very effectual, regulating and strengthening agent, it compensates or removes, often slowly, but surely, the different injurious states, prejudicial to our well-being.

Well managed institutions for movement cures seem to me to be a great necessity, insomuch as they could do considerable good. Also for large hospitals, in which the chief concern is the restoration of lost capacity for work, the necessity should soon be apparent of providing proper instruction and furnishing the apparatus suitable for such an end.

For massage cures, as compared with movement cures, rational indications are less seldom met with.

As a detergent agent, massage is of great value. At the same time it is of inferior value as a strengthening agent, and for many other purposes for which it is recommended nowadays. It is quite rational to use massage if an anodyne effect is desired, or if painful infiltrations are present under the skin, in muscles, tendons or joints, or if effusions are to be manipulated or dispersed, in localities which can be reached by the hand. Massage is also of value when it is a question of quickly removing local circulatory disturbances, but very little reason exists for recommending it when movements must seem to be indicated.

Provided that massage has performed its allotted task, excretion;—movements must do the rest. They alone can restore the normal working power of the damaged part and of the weakened organism. Diseases of the heart, obesity, neurasthenic conditions, in the treatment of which we ought to aim not merely at regulation of the circulation and improvement of the quality of the blood, but, above all, at increased capacity for activity, strengthening of the heart, of the initiative, of the will power, should not be treated exclusively by massage.

Further, sufficient stress is not laid on this point, that with the movement cure, we never attack the sick part or the injured member exclusively, but always consider the body as a whole. It is on this account that carefully-chosen movements never produce harm and have so many surprising results to show. Their good points are more and more valued, and are yielding them the place in the healing art which they deserve.

To this end I have undertaken the foregoing somewhat explanatory work, and have attempted, by the exposition of a series of cases, to evoke a livelier interest in our method of movement. It has indeed cost bitter fights to gain for these methods the recognition which they now enjoy. It was a justifiable undertaking, but a very tiring one, and thankless as well. Yet I now feel myself strong enough to confute opponents of our system by the fact

that by the movement cure and massage we often attain results when all other remedies have had no effect. The co-operation and endurance of the patient are naturally indispensable.

THE END.



